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Special Education Teachers' Attitudes Towards Teaching Students With Learning Disabilities in Middle Schools In Saudi Arabia

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Abstract:

Teachers' practices are influenced by their attitudes and beliefs (Avramidis & Norwich, 2002). Consequently, a large part of the success of inclusive education depends on teachers' attitudes. Understanding teachers' attitudes and beliefs is critical to the development and success of inclusive education practices (Hodkinson, 2005). In Saudi Arabia, limited research has been conducted on teachers' attitudes and beliefs at the primary school level and no research has been identified that investigates teachers' attitudes towards teaching students with learning disabilities (LD) at the middle school level. The present study sought to investigate special education teachers' attitudes towards teaching students with LD in regular classrooms and examine the collaborative efforts that create inclusive classrooms in Saudi public middle schools. The quantitative data were collected through a Likert scale questionnaire. A vignette attached to the questionnaire was used to collect the qualitative data. Fifty-six special education teachers from a range of middle schools in Riyadh completed the questionnaire for this study. The results indicated that special education teachers' attitudes towards inclusive education were positive. There were no significant differences between teachers' attitudes according to their gender. However, the qualitative findings indicated that special education teachers thought their training was insufficient to meet the educational needs of students with LD in Saudi middle schools. The results of this study suggest that decision makers should consider in-service and pre-service training and education programs for teachers to enhance educational services for students with LD. Teachers should be equipped with the necessary knowledge and skills before implementing inclusive education practices. Specifically, teachers need to learn to use evidence-based strategies to serve students with LD in inclusive classrooms and find ways to collaborate with colleagues and parents through on-going professional learning..

Keywords: Inclusive education, students with learning disabilities, special education

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INTRODUCTION

Following the Salamanca Statement (1994) in Spain, which emphasized the importance of implementing the philosophy of inclusive education, students with education special needs are increasingly being educated in regular education classrooms alongside their peers (UNESCO, 1994). Unlike the earlier terms of integration and mainstream, inclusive education does not refer to the placement of students with LD in regular classrooms; rather, inclusive education refers to the process of making educational settings available for all students, the acceptance of all students regardless of their abilities and to all students being members of regular classrooms and not belonging to special classrooms such as resource rooms (Halvorsen & Neary, 2009). The goal of inclusive education is to enable all students to participate in classrooms and to ensure that decisions are made about how best support them to achieve their individualized education goals within a rich and dynamic education environment (Snell, Janney, & Elliot, 2000).

It is common to find students with LD in regular education classrooms (Boyle & Scanlon, 2010). The most common definition cited is the Individuals with Disabilities Education Act (IDEA) definition, which defined a specific LD as:

a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or solve mathematical problems. (Hallahan, Kauffman, & Pullen, 2009, p. 1)

For many years, special education resource rooms were the most common form of educational placement for students with LD. However, in the mid 1990s, in keeping with the trend for schools to uphold the principles of inclusion, regular classrooms surpassed resource rooms as the most frequent placement option for students with LDs. Researchers found that the needs of students with mild LD could be met in regular classrooms, if adaptations or modifications to the curriculum, instructions and teaching materials were made (Torgesen, 2009; Vellutino, Scanlon, Small, & Fanuele, 2006). When teachers effectively address the individual educational needs of students with LD, these students should be able to succeed in regular classrooms (Westwood, 2008). Consequently, given that the goal of inclusive education is to help all students to access the curriculum, teamwork or collaborative teaming is needed to develop individualized education programs, plan collaborative instructions and incorporate special education services and supports into classrooms. However, students with LD do not need to be removed from regular classrooms to receive specialized instructions and related services (Snell et al., 2000).

Collaboration

Collaboration between special and general education teachers is a vital element of inclusive education practices (Friend & Cook, 2013). Collaboration has been defined as a communicative approach in which at least two professionals work together to achieve a common goal (Friend & Cook, 2013). It takes time and requires professional support; thus,

general and special education teachers perceive the benefits and limitations of collaboration differently. Friend and Cook (2013) linked successful collaboration with the presence of trust, respect and shared responsibility for students' educational success. Collaboration requires equality between colleagues, working towards clearly determined common goals, sharing resources to achieve goals and sharing the responsibility of making decisions and for the results of the decisions (Loreman, Deppeler, & Harvey, 2005). Collaboration is an umbrella term that covers a variety of activities, including co-teaching.

Teachers' Attitudes

Attitude is defined as "a disposition to respond favorably or unfavorably to an object, person, institution, or event" (Ajzen, 2005, p. 3). According to the theory of planned behaviour (TPB), performing a behavior is influenced by attitudes that individuals hold about that behavior, and the extent to which they possess the skills, resources and knowledge to carry out the behaviour (Ajzen & Fishbein, 2005). Thus, the attitudes of teachers play a key role in the success of inclusive education programs (Avramidis, Bayliss, & Burden, 2000; DeSimone & Parmar, 2006; Wiener & Tardif, 2004), as the positive or negative attitudes held by general and special education teachers influence their performances (Park, Chitiyo, & Choi, 2010).

Researchers have investigated the attitudes of special and general education teachers towards the inclusion of students with special education needs and the variables affecting affected teachers' attitudes. The majority of studies have shown that teachers hold either neutral or positive attitudes (Hwang & Evans, 2010; Mackey, 2008; Subban & Sharma, 2005); however, some studies have reported that teachers hold negative attitudes (Chhabra, Srivastava, & Srivastava, 2010). It should also be noted that even teachers who hold positive attitudes towards inclusion have still expressed concerns about implementing inclusive education programs.

Previous research indicated that some factors may influence teachers' attitudes such as the severity and type of the disability; however, teachers usually accept the inclusion of students with mild to moderate disabilities (Avramidis et al., 2000). Dupoux, Hammond, Wolman and Ingalls (2006) reported that teachers' attitudes were more positive towards students with specific learning disabilities than towards students with emotional and behavioural disabilities. Further, studies have shown that teaching experience (i.e., the number of years teachers have implemented inclusive practices and taught students with special needs) has a positive influence on teachers' attitudes (Avramidis et al., 2000; Walker, 2012). Additionally, Subban and Sharma (2005) found that the amount of training in the field of special education appears to be linked to teachers' attitudes towards inclusive education and that even short-term training has a positive impact on teachers' attitudes (Beacham & Rouse, 2012).

Despite the importance of collaboration between general and special educators, few studies have examined teachers' attitudes and perceptions towards their roles and responsibilities in collaboration process. Studies on teachers' attitudes about collaboration

have shown that teachers support collaboration as an educational delivery model (Grahn, 2007; Solis, Vaughn, Swanson, & McCulley, 2012). However, teachers remained concerned about a lack of training and uncertainty in relation to their roles (Grahn, 2007; Mitchell, 2013). Researchers (i.e., Friend & Bursuck, 2012; Walther-Thomas, Korinek, McLaughlin, & Williams, 2000) have highlighted the negative factors influencing the collaborative relationship between general and special education teachers, including unclear responsibilities and roles, a lack of professional development opportunities and limited resources.

Learning Disabilities Programs in Saudi Arabia

The largest proportion of students receiving special education services in Saudi schools are those diagnosed with LD (Al-Mousa, 2010). Since 1995, special education services have been provided to students with LD at the primary school level (Al-Mousa, 2010). When programs for students with LD were first introduced, special education teachers faced a number of issues, including their role not being accepted by general education teachers and a lack of administrative support (Sheaha, 2004). In 2005, the Ministry of Education began to introduce programs for students with LD in middle schools and high schools; however, the number of programs in middle schools and high schools continues to be limited.

For many years, the core role of special education teachers has been to identify students with LD, create an IEP for each student, and teach them individually during part of the school day in separate classrooms called 'resource rooms'. More recently, special education teachers have been encouraged to use collaborative practices (e.g., co-teaching) to support students with LD in regular education classrooms. Previous studies in the Saudi context (e.g., Al-Ahmadi, 2009) have shown that teachers are not satisfied that they have the skills to teach students with LDs in regular classrooms. Indeed, both general and special education teachers have reported that they have insufficient skills and knowledge to teach in inclusive classrooms and implement such practices. None of these studies has focused on teachers' attitudes towards their responsibilities in collaboration process. Thus, special or general education teachers' attitudes towards inclusive education for students with LD and teachers' responsibilities in collaborative practices at the middle school level is unknown.

Given that understanding attitudes is key to improving inclusive education practices in schools, this study sought to investigate special education teachers' attitudes toward collaboration and inclusive education for students with learning disabilities in Saudi regular classrooms in middle schools.

METHOD

Participants

Fifty-six special education teachers at public middle schools in Riyadh, Saudi Arabia participated in this study during the 2013–2014 school year. Table 1 shows the demographic information of teachers who completed the questionnaire. Of the

participants, five (i.e., 8.9%) of the special education teachers were male. Only 1.8% of the special education teachers had more than 15 years of experience in teaching.

Table 1
Demographic Information of the Participants

Variables	Frequency	Percentage
Gender		
Male	5	8.9
Female	51	91.1
Total	56	100.0
Years of teaching experience		
<1	1	1.8
1–5	13	23.2
6–10	21	37.5
11–15	20	35.7
16–20	1	1.0
Total	56	100.0
Qualification		
Bachelor degree	48	85.7
Postgraduate	8	14.3
Total	56	100.0
Previously worked as a regular education teacher		
Yes	25	44.6
Total	56	100.0
Service delivery model		
Resource room	24	42.9
Resource room and regular classroom	32	57.1
Total	56	100.0

Data Collection

This study used a mixed-methods design to develop a broad understanding of participants' attitudes while simultaneously investigating their deeper-set attitudes towards inclusion and the role of collaboration. The quantitative data were collected through a Likert scale questionnaire. A vignette attached to the questionnaire was used to collect the qualitative data.

The questionnaire that participants completed in this study was a modified version of one originally developed by Ragland (2005) that sought to examine inclusive education and collaboration in elementary or primary schools in the United States (US). Grahn (2007) further adapted this version for the use of secondary school teachers in the US. Both versions were used to formulate the questionnaire used in this study. The modified questionnaire comprised 32 items that participants were asked to rate using a five-point Likert scale. The first section of the questionnaire collected participants' demographic information so that grouping variables (e.g., gender, years of experience and level of education) could be used for the analyses. The second section comprised five items aimed

at measuring participants' attitudes towards the inclusive education of students with learning disabilities (LD) The third section comprised 15 items designed to measure participants' attitudes towards their roles, responsibilities, methods and commitment to the collaboration process. The fourth section comprised eight items that sought to explore and measure participants' feelings about collaboration.

The Cronbach's alpha for the total questionnaire was 0.907, indicating that the questionnaire had high internal consistency (Cortina, 1993). The correlation coefficients between the items and the dimension total score were statistically significant ($p < 0.01$), indicating that the items were related and contributed to the overall construct being measured. Based on the validity and reliability results, the questionnaire met the key indicators of technical adequacy for its purposes. Thus, the questionnaire qualified as a suitable measurement instrument that could be applied confidently in the study.

The researcher developed a vignette that described a situation in which a special education teacher provided learning support to a student with LD during his/her primary school education. The vignette highlighted the concerns of the student's parents about his/her enrolment in middle school. There were two versions of the story; in the first, the student was a boy and in the second, the student was a girl. Two versions were needed to reflect the cultural context of Saudi schools in which students are separated by gender. Participants were asked to respond to four open-ended questions. This provided participants with a chance to express their views and perceptions towards inclusion and collaboration in relation to the student in the vignette.

Procedure

The researcher provided the questionnaires to the principal of each school for distribution. This strategy was adopted to ensure that the researcher maintained an appropriate distance from the recruitment process. Participants returned the completed questionnaires to the school principals, sealed in the envelopes with which they had been provided. The researcher then organized to have the questionnaires collected and prepared for analysis.

RESULTS

Quantitative Results

Attitudes towards Inclusive Education

Special education teachers' attitudes towards inclusive education for students with LD in Saudi middle schools were examined using five questionnaire items (i.e., items 1, 12, 13, 15 and 25). Table 1 shows the number of responses according to participants' level of agreement with each item. Participants generally had positive attitudes towards inclusive education. Table 2 also shows that participants agreed that special education teachers had specialist knowledge about the education of students with LD (i.e., Item 15). Further, the majority of participants disagreed with the statement that students with LD should receive the educational support in a resource room (i.e., Item 13). Participants also

agreed with the statement that general education teachers have the necessary professional knowledge to implement education practices that support the education of students with LD. The analysis of the results showed that demographic characteristics (i.e., gender, years of experience, qualification, they had worked as general education teachers, service delivery model) did not affect the degree to which participants agreed with concepts related to the first dimension.

Table 2

Frequency (Percentage) and Mean [Standard Deviation] for Items in the First Dimension (Inclusive Education)

Item	Statement	Degree of Agreement (%)					Mean [StdDev]
		SD	D	N	A	SA	
1	The regular education classroom is the best environment for students with learning disabilities	2 (3.6)	7 (12.5)	2 (3.6)	25 (44.6)	20 (35.7)	3.96 [1.11]
12	General education teachers have the professional knowledge to implement education practices that support the education of students with learning disabilities	2 (8.8)	14 (32.4)	13 (22.1)	21 (29.8)	6 (6.9)	3.26 [1.07]
13	Students with learning disabilities should receive educational support in a resource room	30 (53.6)	19 (33.9)	2 (3.6)	5 (8.9)	-	4.32 [0.916]
15	Special education teachers are knowledgeable about students with learning disabilities and the support they require to be included in the regular education classroom curriculum	-	1 (1.8)	2 (3.6)	14 (25.0)	39 (69.6)	4.62 [0.648]
25	Students with learning disabilities can be well served in regular education classrooms	1 (1.8)	12 (21.4)	10 (17.9)	25 (44.6)	8 (14.3)	3.48 [1.04]
General mean						3.93 [0.496]	

Attitudes towards Collaboration

Teacher's attitudes towards collaboration were examined using two dimensions: (i) knowledge of collaboration; and (ii) feelings towards collaboration. Twenty-seven items were used to measure teachers' attitudes towards collaboration. Tables 3 and 4 show the level of agreement of the participants by item. Across the items, the mean score on each dimension indicated that special education teachers displayed a high-level of agreement about collaboration. Most of the participants agreed with the negatively worded statement that: 'I prefer not to work with another teacher'. This could indicate that the

participants did not favour co-teaching as a model for inclusion. Further, most special education teachers did not agree that they should share the responsibilities of regular education classrooms. There were no statistically significant differences in participants' attitudes towards collaboration based on the demographic attributes (i.e., gender, years of experience, qualification, they had worked as general education teachers, service delivery model).

Table 3

Frequency (Percentage) and Mean [Standard Deviation] for Items in the Second Dimension (Collaboration)

Statement	Degree of Agreement (%)					Mean [StdDev]
	SD	D	N	A	SA	
3. Collaboration between special education and general education teachers is necessary for successful education of students with learning disabilities in regular education classrooms	-	-	-	3 (5.4)	53 (94.6)	4.94 [0.227]
4. Special and general education teachers should share equal responsibility for students' success	-	-	-	9 (47)	47 (83.9)	4.83 [0.370]
5. Lesson planning should be equally shared between special and general education teachers	-	3 (5.4)	3 (5.4)	23 (41.1)	27 (48.2)	4.32 [0.811]
6. General and special education teachers should share the same educational philosophy	-	3 (5.4)	6 (10.7)	26 (46.4)	21 (37.5)	4.16 [0.826]
7. Clear, open communication between general and special education teachers is imperative for successful collaboration	-	-	1 (1.8)	14 (25.0)	41 (73.2)	4.71 [0.494]
8. Clearly delineated roles and responsibilities are imperative for successful collaboration	-	-	-	12 (21.4)	44 (78.6)	4.78 [0.414]
9. Implementation of the classroom curriculum should be a responsibility shared equally between special and general education teachers	-	7 (12.5)	3 (5.4)	28 (50.0)	18 (32.1)	4.01 [0.94]
10. Regularly scheduled shared planning time is imperative for successful collaboration	-	1 (1.8)	1 (1.8)	31 (55.4)	23 (41.1)	4.35 [0.615]
11. General education teachers should participate in the collaborative process for developing individualised education	-	5 (8.9)	10 (17.9)	26 (46.4)	15 (26.8)	3.91 [0.900]

programmes(IEP) for students with learning disabilities.						
14. General education teachers should hold primary responsibility for planning and implementing the regular education classroom curriculum, with support from the special education teacher.	-	2 (3.6)	8 (14.3)	22 (39.3)	24 (42.9)	4.21 [0.824]
16. Teacher preparation courses at universities and colleges should prepare all future teachers for collaboration.	-	-	-	17 (30.4)	39 (69.6)	4.69 [0.463]
18. Grading responsibilities should be equally shared between special and general education teachers.	-	7 (12.5)	3 (5.4)	20 (35.7)	26 (46.4)	4.16 [1.00]
24. The special education teacher should hold primary responsibility for making accommodations and modifications.	-	5 (8.9)	3 (5.4)	29 (51.8)	19 (33.9)	4.10 [0.867]
27. General and special education teachers must be committed to the concept of inclusion to be able to collaborate successfully.	-	-	2 (3.6)	35 (62.5)	19 (33.9)	4.30 [0.536]
28. I am willing to participate in a discussion with my colleagues regarding the educational needs of students with learning disabilities.	-	-	1 (1.8)	23 (41.1)	32 (57.1)	4.55 [0.536]
29. Acknowledging and valuing the knowledge and expertise of each member of a collaborative team is important.	-	-	1 (1.8)	29 (51.8)	26 (46.4)	4.44 [0.536]
30. Strong administrative support is a requirement of successful collaboration.	-	-	-	15 (26.8)	41 (73.2)	4.73 [0.446]
31. Responsibility for the implementation of accommodations should be shared equally between general and special education teachers.	-	-	-	28 (50.0)	28 (50.5)	4.50 [0.504]
32. General and special education teachers should equally share the responsibility of classroom management.	1 (1.8)	18 (32.1)	9 (16.1)	15 (26.8)	13 (23.2)	3.37 [1.21]
General mean						4.37 [0.33]

Table 4

Frequency (Percentage) and Mean [Standard Deviation] for Items in the Third Dimension (Feelings towards Collaboration)

Statement	Degree of Agreement (%)					Mean [StdDev]
	SD	D	N	A	SA	
2. A school culture of shared leadership for student success would increase my comfort with working collaboratively	-	-	1 (1.8)	17 (30.4)	38 (67.9)	4.66 [0.51]
17. I am knowledgeable enough to participate comfortably in serving students with learning disabilities in the regular classroom	1 (1.8)	3 (5.4)	5 (8.9)	26 (46.4)	21 (37.5)	4.12 [0.91]
19. In-service training would increase my comfort with implementing collaboration to support students in regular classrooms	-	1 (1.8)	1 (1.8)	20 (35.7)	34 (60.7)	4.55 [0.63]
20. Sufficient regularly scheduled collaborative planning time would increase my comfort with implementing collaboration to support students in regular classrooms	-	-	2 (3.6)	26 (46.4)	28 (50.0)	4.46 [0.57]
21. It is hard to imagine sharing teaching responsibilities in the regular classroom	14 (25.0)	18 (32.1)	14 (25.0)	10 (17.9)	-	3.64 [1.05]
22. I prefer not to work with another teacher	2 (3.6)	11 (19.6)	5 (8.9)	30 (53.6)	8 (14.3)	2.44 [1.07]
23. A school culture of open communication would increase my comfort with working collaboratively	-	-	-	21 (37.5)	35 (62.5)	4.62 [0.48]
26. I am comfortable with the concept of collaboration and support it as an educational delivery model.	-	3 (5.4)	3 (5.4)	27 (48.2)	23 (41.1)	4.25 [0.79]
				General Mean		4.09 [0.33]

Qualitative Results

Inclusive Education

The majority of participants responded positively to the item stating that the student with the LD could succeed at the middle school level, but their explanations varied. A few participants believed that the LD had already been addressed at the primary school level; however, the majority of participants were of the view that the student would succeed if his/her school had a program for students with LD. This positive response suggested that the participants believed that the student in the vignette could be educated within a general education context. This response also supported other items in the questionnaire, including Item 25 that stated: 'Students with learning disabilities can be well served in regular classrooms'). The mean response to this item was 3.48, suggesting a positive attitude.

Supporting Access to the Curriculum

In response to the question asking what teachers can do to help the student with the LD in regular classrooms, the following common themes emerged: developing an individualised education program (IEP) for the student, teaching the student learning strategies, helping the student to summarise the curriculum and giving the student's family tips on how to support the student. Most participants reported that they would take the student out of the regular education classroom to support him/her; however, a smaller number of participants reported that they would consult general teachers and support the student inside their regular education classrooms. The responses indicated that resource rooms still provide vital services and are the places in which students are expected to get help. Further, no solid emphasis on collaborative practices was found.

Collaboration with Colleagues

In relation to whom teachers could work with to assist students with LD in regular classrooms, the common themes that emerged from the special education teachers who answered this question included the general education teacher or 'classroom teacher', the student advisor and families. Some special education teachers commented that 'creating teamwork' should occur, but that, in reality, it did not. Other teachers stated that as special education teachers they would ask the student to attend the resource room.

Strengths in Collaboration

The last question asked participants what was the greatest skill that they could bring to the collaborative process when working with a colleague. Special education teachers referred to developing IEPs, teaching students individually in resource rooms, consulting with general education teachers when writing test questions and assessing students. Few of participants' responses mentioned collaborative teaching. Little evidence was elicited from participants as to how they could work together in regular education classrooms (e.g., adjusting curriculum outcomes and materials, co-teaching content). If a student needed support, it seems that the special education teacher would work with this student in a resource room.

Additional Comments

Having answered the questions, some participants wrote further comments that revealed additional opinions and concerns. Special education teachers mentioned the need for training courses on collaboration and teamwork and the need to educate general teachers about LD and the role of special education teachers. The special education teachers were quite vocal about the need to have knowledge of different curriculum areas (e.g., mathematics, science). In addition, they stated that regular education teachers did not understand their roles. Finally, they reported the need for assistive technology, raising the awareness of the importance of collaboration and teamwork in schools, professional development, and workshops on collaboration and evidence-based strategies to teach students with LD.

In brief, while the attitudes of special education teachers towards inclusive education and collaboration were positive, their different views on some questionnaire items indicated that they did not prefer working with another teacher. Further, the results showed that most of the special education teachers did not agree that they should share the responsibilities of regular education teachers. This could be a consequence of special education teachers having a lack of training in curriculum areas or classrooms management skills. Their responses to the vignette also support these attitudes. Additionally, the special education teachers that reported that they would collaborate with general education teachers to support and educate students with LD in regular education classrooms specifically reported the two methods of 'observation' and 'consulting general education teachers'.

DISCUSSION AND CONCLUSION

Around the world, the attitudes of both special and general educators have been shown to impact inclusion practices. Moving towards inclusive education needs all players to work towards quality education for all students. Teachers concerns in this study are similar to the concerns that teachers reported in other international studies (e.g., Ahmmed, Sharma, & Deppeler, 2012; Grahm, 2007; Mitchell, 2013; Khairudin, Dally, & Foggett, 2016; Strogilos, Stefanidis, & Tragoulia, 2016). Lack of professional development, collaborative teaming, inclusive culture in the school, and administrative support frequently reported as barriers that impact the development of inclusive practices.

In applying the theory of planned behavior (Ajzen & Fishbein, 2005), enhancing teacher's attitudes is key to upholding the principles of inclusive education. This could be achieved by enhancing teacher preparation

RECOMMENDATIONS

To maximize inclusive education, decision makers need to consider teachers' attitudes and concerns. Creating inclusive school culture is essential to help both general and special education teachers to work collaboratively, and to ensure that all students including students with LD are provided with appropriate educational support that they need. Teachers' preparation programs should be improved to ensure that future teachers are prepared to support students with special education needs, including LD effectively. In addition, the provision of significant administrative support (critical to facilitating the implementation of inclusive practices), and providing professional development programs are essential for the practice.

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An Investigation on Quantum Learning Model

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Abstract:

Today, the importance of education has increased even more in terms of raising qualified individuals. According to researches on the development of upper mental skills and abilities, it has been found out that students who are actively involved in the learning process learn better. In result of information interactions, treasury is changing and increasing. To adjust to this changing, people have to improve their skills and abilities effectively; hence, various methods and techniques have been developed in education. One of them is quantum learning which a model is becoming widespread. This research includes a literature review regarding quantum learning model and suggestions given light of the related literature.

Keywords: Curriculum development, new approaches, quantum learning

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INTRODUCTION

According to Newtonian physics based on observations, the world was thought to contain a large number of observational information that could be analyzed with a number of laws and principles. Because this concept of force reduced the whole to a few simple pieces and identified events with solid cause-and-effect relations, people began to see themselves as isolated areas that were only connected to each other by force and activity. Human behavior was mostly determined by biology, ground and conditions (Khun et al., 1990).

Quantum theorem can be applied to physical reality at every level, unlike this classical paradigm. Quantum means the smallest piece, that is, particle, a small energy package that can not be divided. In quantum events usually It is not possible to know what, how and how it will come to fruition. The quantum physics assumes that new properties will emerge when simple entities join or relate. Accordingly, the whole is larger than the sum of the parts. Each piece of quantum has a versatile capacity that will affect the world. The quantum paradigm is complete. It lines up with this: We will know more about assets and systems, when they are seen as a whole (Demirel, 2008).

While many social scientists think that they can be satisfied with a single paradigm in their work, the developments that have taken place have caused change in the social sciences where the Newtonian paradigm is dominant (Khun et al., 1990). This change also affected training programs. Quantum learning keeps things together to create meaningful information using all the neural networks in your brain (Vella, 2002). Quantum learning aims at realizing the individual as a whole, moving from the findings and assumptions of the quantum physics. In this direction, it is important for the individual to form possible truths and question them, to evaluate them according to the circumstances in which events and facts are realized with a deductive approach, to perceive reality as a whole, to gain a subjective point of view and to avoid certain judgments (Demirel, 2008).

Bases of quantum learning is based on Suggestopedia studies developed by Bulgarian educator Georgi Lazanov in the 1970s. The concept of quantum learning has been developed by Bobbi DePorter in the 1980s in the United States, from the definition as "the interaction of light" (DePorter and Hernacki, 1992).

Quantum Learning Model

Quantum learning which emerged from the quantum physics and emerged as a synthesized state of many new theories covers the key concepts of many methods and techniques like suggestopedia, accelerated learning techniques and NLP, right-left brain theory, triple brain theory, learning styles such as visual, auditory and kinesthetic,

multiple intelligence theory, holistic education, experiential learning, metaphorical learning, simulation, emotional intelligence (DePorter and Hernacki, 1992).

The main goal of quantum learning is to realize the individual as a whole (Hanbay, 2009). It is argued that this approach, which is mostly used in language teaching, is important for inspiration to influence learning outcomes and for suggesting every detail in the class. Baroque style music in the classroom, sitting comfortably, increasing individual participation, the attitudes and behaviors of the teacher is important to create positive suggestions (DePorter and Hernacki, 1999; Mihaila-Lisa, 2003; Minewiser, 2000). Quantum learning, which is indicated to be appropriate for learners of all age groups and styles, is based on the five basic principles listed below (DePorter et al., 1999):

1. The classroom environment, body language, design of lessons and lecture notes, and more are all found in the learning environment. The ideal learning environment includes appropriate light, purpose-selected colors, positive affirmation posters, plants, props and music.

2. Everything is done for the purpose. Because the lessons work carefully in orchestral order.

3. Our brain is more successful with complex stimuli. Learning is more effective if new learning is associated with things that are experienced outside of learning.

4. Learning involves risk. But learning becomes more comfortable if the learning environment is made fun. If the student follows this step, he sees learning safe and provides superior skills.

5. If something is worth learning it's worth celebrating because appropriate feedback creates positive emotional associations with learning.

Some of these principles listed above also form the basis for the establishment of the quantum learning design framework. According to quantum learning model, learning consists of six interrelated phases.

Quantum Learning Cycle

Quantum Learning cycle whose abbreviation known as EEL Dr. C has taken its name from the initials of the phases that make up this design and each stage reveals the entire relationship of parts in the learning teaching process. This design can be used to stimulate learners' natural learning desires; using quantum learning design framework can increase interest and motivation (DePorter et al.,1999). This model occurs of six stages that are Enroll, Experience, Label, Demonstrate, Review and Celebrate. Grade level guarantees that learners are interested in every lesson regardless of target group and content area (DePorter et al., 1999). With this framework learning becomes dynamic, easy and lasting. This design encourages student success; enables learners to make their learning experience life, practice and makes content meaningful for learners.

Detailed information on these six stages is listed below:

1. Enroll: the students will be attracted the attention and the curiosity is woken up at this stage where the connection with the real world is established and the interest about the subject is established. At this stage, the student understands that the subject is related to his/her own experiences, contacts with them and assumes responsibility for learning. Students are expected to create the question "What is here for me?" and to be curious. For this purpose, a short story, a striking question, pantomime, sketches or a short video can be used. In other words, at this stage the lesson can start with an activity that will awaken the curiosity of the students and a general picture is drawn by taking advantage of student experiences on what to expect from this lesson.

2. Experience: At this stage, the learners' preliminary information is actuated to increase the sense of curiosity and need to learn. In this phase occurs rational questions such as "what?" "why?". This phase where the learner is ready to learn; benefit from the brain's natural learning/exploration desire. This phase is the beginning of the next phase. Ensure that learners establish links with prior knowledge of the subject and make sense of the content; games, simulations, mnemotechnics, mind maps, team work and activities can be used. The following questions can be a guide for teaching lessons in designing this stage: What is the best way for learners to acquire knowledge? Which game or activity will motivate learners' existing knowledge and make them feel they need learning?

3. Label: In this phase, which built on the learners' curiosity and where innovations are added on preliminary knowledge; the brain's natural labeling and identification needs are exploited; information, formulas, reasons and places are labeled. Experiences provide the opportunity to teach students through their past experiences by linking to the power of the current knowledge and curiosity of the learners. At this stage where thinking skills, learning strategies and concepts are taught; colors, graphics, supporters and posters can be used. The following questions can be a guide for teaching lessons in designing this stage: What distinctions should be made in the learning of learners? What can be added to the meanings of the learners? Which strategies and thinking tools are useful for the learners to know or use?

4. Demonstrate: At this stage, the learner is given the opportunity to receive new information, combine with other information and practice in different situations. Because experience is necessary to make sense of the information received; earners can internalize knowledge in this way. This stage is essential to show what learners know, to establish connections and to practice. In addition, giving learners the activities they can learn, gives them confidence by providing them with a sense of what they know. At this stage; team work, demonstrations, original video footage, posters, games, songs, note taking and graphical illustrations can be used. The following question can be the guide for teaching the lesson in designing this stage: 'How can they show the level of proficiency in new information they have?'

5. Review: At this stage where the neural networks of the brain are strengthened and the acquired knowledge and skills are learned in the brains of the learners, the feeling of "knowing what I know" occurs and thus the sense of self-confidence develops. It is important that this level is appropriate for the level of development of the students, that they have multiple intelligences and appeal to different senses. The following questions can be a guide for teaching lessons in designing this stage: "What is the best way to repeat this learning?" "How can each learner's ability to repeat?"

6. Celebrate: At this stage "I succeed" sense occurs on learner. Events to be held during the celebration may vary. At this stage, for example, competitions can be held to entertain learners and help them enjoy their new knowledge. Celebration stage creates positive association, positive emotions and confidence in learning; provide feedback on the process; reinforce learning; motivates learning again and again and increases the desire to achieve. The following questions can be a guide for teaching lessons in designing this stage: 'What is the best way to celebrate this learning?' 'How do you report everyone's success?'

Studies on Quantum Learning

In this section, the researches and their results carried out in Turkey and abroad related to quantum learning are given.

Quantum Learning Network is an educational and training organization for quantum learning activities in Oceanside and California states of The United States which is established as 'Learning Forum'. As an important event of Quantum Learning Network, training seminars are organized with Supercamp programs and students participating in these seminars learn quantum learning principles and academic skills such as fast reading, note taking techniques, memory techniques, writing. In our country, they have to be applied as 'Supercamp Turkey' in recent years. (Usta, 2006; Demir, 2006).

A study was conducted by Vos-Groenendal (1991) to determine the academic achievements and attitudes of students who participated in supercamps between 1983-1989. According to the results of the research, the motivation scores of the students who participated in Supercamps increased by %68 compared to the pre-tests. The increase rate of the academic achievement grades of the students was determined as %73. %84 increase was observed in the self-esteem of the students and it was determined that % 96 of the students who participated in the program continued their positive attitude despite learning. Later, it was determined that the students continued to use the skills at the rate of %98 in the scale developed for the students to use quantum learning techniques in the school environment.

A study was conducted on the impact of the quantum learning model on academic achievement by Learning Forum, in the Grossmont Unified High School District in the USA in 1993. According to the findings, the number of students with academic achievement between 3.0 and 4.0 increased by %4. In addition, the number of students with academic achievement between 2.0 and 3.0 increased by %14. As a result, %63 of students with weak academic achievements had an average academic grade above 2 (Le Tellier and DePorter, 2002).

The Learning Forum company conducted a survey in 1996 examining the impact and academic achievement of quantum learner, which was formed by Northwood High School in 1996, on student performance. According to the results obtained after the quantum learning training; The students' linguistics and the number of students who took notes in the linguistics and reading lessons were examined and an increase of %21 was observed in the numbers of these students before and after the program. Students' vocabulary and vocabulary skills in pre- and post-processing social communication were examined and an increase of %13.8 in word usage scores and %1.5 in word definition test scores were observed in social communication. In the math skills exam, the students showed %100 success.

A research was conducted by Nourie (1998) to determine the effectiveness of quantum learning. According to the results of this research; achievements in mathematics and English classes of students who are participating in quantum learning training and who are at a lower level than the 9th grade standards are at grade 9. In addition, students' problem-solving skills in mathematics classes have also increased significantly. There was a difference of %5 in the success rates of the quantum learning education classes with normal classes. The attendance of students attending the seminar decreased, the attendance of the classes increased, following class rules increased and the school behaviors improved. Students also point out that teaching in quantum learning classes is fun. There was a significant increase in student perception rates before and after the program. It has been observed that teachers are seen to develop in learning techniques and styles, to take risks, to communicate with students, to open up new horizons to students and to motivate them effectively.

Barlas and others (2002) conducted a study to investigate the influence of quantum learning on students' attitudes toward learning, self-confidence and academic achievement in Carpentersville, USA. This study included 7th and 8th grade students, parents and teachers. The Illinois Standard Achievement Test results were examined to compare the academic achievement of students. According to the results obtained after the application of quantum learning; In the 7th grade social and 8th grade mathematics

results, the rate of elimination of this problem in the students who met the standards and had learning difficulties increased in the class applied to quantum learning. The students with high self-esteem and those with learning disabilities have higher self-confidence levels at quantum learning class. In addition, the views of the parents support these results. According to the results of the research, students who have received quantum learning training perform better and the confidence of the students themselves is increased. It has also been achieved that the teachers participating in the practice are more successful than the traditional teaching because of enriching the learning environment, using more music than the traditional class, celebrating students' learning and using visuals to provide students' thoughts and reminders.

Benn (2003) conducted a study to investigate the effects of the quantum learning model on the achievement of students in basic academic courses in the 2001-2002 academic year. According to the results of the research, the quantum learning model has a positive effect on the academic achievement of students in 18 different schools in 4 states in the USA. It has been found that the academic achievement, mathematical skills, reading and writing skills of students who have received quantum learning education increase statistically and educationally significantly compared to non-educated students.

Myer (2005) conducted a study to investigate the effects of quantum learning on reading skills, general mathematics inventories, social, science and mathematics lessons in 2004-2005 academic year. This study was conducted with three third-graders. Mathematical inventories and readings of the students who were given quantum learning education were evaluated and it was determined that they increased in reading and mathematics skills. In addition, the level of readiness of students in social sciences, science and mathematics courses has been increased. The views of third-grade teachers in practice also suggest that quantum learning practices enhance the development of students.

Demir and Gedikoğlu (2007), made an experimental study with the aim of determining the effect of quantum learning model on the students' academic success at secondary education level and the changes in the students' self perception and beliefs about the course, school and learning. According to the results, the difference between experimental and control group was statistically significant. It was seen that there were positive changes in the students' beliefs related to the course, school and learning. As for the students' self perceptions, there was increase in their self confidence, responsibility and creativity. It was found out that perceive themselves in a more positive way. The students believed that they could use the knowledge they had received in their courses and their daily lives.

According to the results of the research made by Güllü (2010), affect of the quantum learning model on students' academic achievement and their attitudes were found to be positively directions.

Ay (2010), carried out a research with the aim of investigating the effect of quantum learning model in science and technology education to the academic success, attitude towards lesson and self direct learning seventh grade students of primary education. At the end of the research, it was determined that quantum learning model had positive effects on success, attitude and self direct learning in science and technology lesson. Girit (2011), carried out a research to analyse the effect of the quantum learning model on the academic success, anxiety level and attitude towards mathematics of seventh grade students. At the end of the research, it was determined that quantum learning model had positive effects on academic success, attitude and concern level.

The purpose of the study made by Çakır (2013) was to investigate the effect of quantum learning model based instruction of "The structure and properties of matter" topic on students' academic achievement, attitudes towards science and technology course and logical thinking skills. As a result of the study, it was found that students' academic achievement, attitudes towards science and technology course and logical thinking skills were improved positively based on the instruction of "The structure of matter and its properties" with quantum learning model.

Acat and Ay (2014), made a study with the aim of examining the effect of quantum learning approach on primary school 7th grade students' achievement, retention and their attitude towards the science course. As a result of the study; quantum learning approach affected students' academic achievement, retention and attitude marks in a positive way. Yilgen (2014), carried out a research in order to identify quantum learning approach's effects on seventh grade students' academic success. In the experimental study and in academic success test meaningful differences have been appeared in favour of the experimental group. It has been thought that this research aiming to test effects of science education based on quantum learning approach on students' academic success would guide researches and experiments in the light of prospective results.

Şöhretli (2014), made a study to investigate the effect of quantum learning model on primary school 4th grade students', in mathematics lesson at "Of fractions to the areas" unit, academic success, science process skills and attitudes towards mathematics. At the end of research, it was determined that quantum learning model had positive effects on academic success and science process skills but for the results of attitude towards mathematics there was no significant effect statistically.

Demirboğa (2014), carried out a study to determine the views of candidate teachers about quantum learning approach. It was determined that candidate teachers hadn't got any clear prior knowledge of quantum learning approach. It was detected that candidate teachers mostly found important quantum learning approach by virtue of providing easy learning, permanence and different perspectives. It was found out that a large part of candidate teachers wanted to use quantum learning approach in the future. On the other hand, it was found that some of candidate teachers found ineffective quantum learning approach because of time consuming, inefficient in crowded classrooms and unsuitable for every lesson and it needs extra materials. It was detected that applied quantum learning education was contributed to professional experience and personal characteristic of candidate teachers.

Alaca (2014), conducted a study to examine the effect of quantum model of learning in science teaching on sixth grade students' academic achievement, attitudes and retention of learning. As a result, in science classes quantum learning model's effect on academic achievement and attitudes weren't found to be significant. However, the effect of the persistence on learning was found to be positive. Çırak (2016), made a study to investigate the effect of blended learning supported by the quantum learning design framework on student achievement, motivation, social-cognitive-teaching presence and perceptions and to determine the effective components of blended learning. The findings revealed that there was a significant difference in terms of academic achievement, motivation, and research group scale scores between the students participated in blended learning supported by the quantum learning process and the students participated in only blended learning process. When the students' perceptions on this learning process were examined, it was found that there was a consensus on the positive sides of the process, they were content with the activities like displaying and repetition as they required active participation, and they attached importance to the role of the instructor. With these interviews, the effective components of blended learning were determined as follows: teacher roles, activities specific to design, the features of learning management system, face-to-face courses as complementary to on-line courses, the features of on-line course materials, student-student interaction, testing and assessment process, students roles, and extracurricular on-line participation.

Şimşek (2016), carried out a study to investigate the effects of quantum learning model on students' academic achievement, their attitude toward science and technology course, motivation toward science learning and the knowledge retention in science and technology course. As a result of the study, it was identified that quantum learning model significantly increased the academic achievement at 8th grade on "Cell division and heredity" unit in comparison with the control group. It was found that quantum learning

model increased the students' motivation and attitude toward science and technology course while it decreased in the control group, however, these increases and decreases were not significant. Furthermore, it was shown that quantum learning model significantly increased the knowledge retention in comparison with the control group. Consequently, it was determined that quantum learning model had a positive effect on students' academic achievement, attitude, motivation and knowledge retention in the science and technology course.

When the results of the researches carried out examined; it is seen that the quantum learning model has helped learners to improve learning achievement skills, has affected students' attitudes towards the lessons positively, has increased their readiness levels and made learning more enjoyable because of organizing the learning environment to address multiple learning senses.

SUGGESTIONS

It has been determined that quantum learning is a positive influence on students' academic achievement and self-confidence. Therefore, these suggestions can be given: organizing reinforcement program especially for students with poor academic achievement, exhibiting posters and phrases that positively impact students in classrooms and workplaces, using proper music during class and at various events, organizing courses and programs to improve the academic skills of students, informing teachers and students about learning styles, informing the students about how to organize course work environments, giving in-service trainings to teachers about using active language in communication with students and organizing courses for students about studying and problem solving strategies.

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Measuring Values in Modern School System

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Abstract:

Teaching values in modern schools is a new phenomenon. Malaysian national curriculum at both primary and secondary school levels ensures that students develop desirable attitudes and behaviors based on human, religious, and spiritual values. The inculcation of the values is made possible through various subjects and non-academic subjects and students' activities. However, knowledge about values education remains limited because there is no measurement device to assess the extent of values teaching in school. To fill this gap, the present study was designed to develop and examine the psychometric properties of an instrument measuring values teaching schools. Using data from 400 high school students, the study developed and validated a measure called Malaysia School Values Scale (MSVS) tailored to high school students in Malaysia. A robust analysis of Confirmatory Factor Analysis (CFA) in Structural Equation Modeling (SEM) provides a rigorous analysis of the model power in relation to construct and content validity, confirming the dimension and analyzing the fitness of the data collected in the hypothesized model. This paper provides insight construct and content analysis using the CFA approach to consider the 15 school values constructs. To achieve the intended research objective, the 15 school values were explored. The results provide evidence that the MSVS achieved sound psychometric properties. The overall reliability value of Cronbach's Alpha was acceptable. The CFA results showed that the goodness-of-fit indices for the hypothesized model were as follows: $\chi^2(182) = 627.269$, $p = 0.00$, $\chi^2/DF = 3.409$, $GFI = 0.852$; $AGFI = 0.814$, $CFI = 0.92$; $IFI = 0.921$, $RMSEA = 0.077$. Each of the indices was above the threshold value. Results imply that MSVS is a valid measure to describe the school values among high school students. However, more studies are recommended to further validate the scale.

Keywords:

School value, practice, belief, convergent validity, discriminant validity, structural model of school value model, Malaysia

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INTRODUCTION

Teaching values in modern or western oriented school is a rather recent phenomenon, as values were regarded as exclusively the domain of families and religious institutions; schools, consequently, assumed a values-neutral role. Internationally, values instruction began in the 1990s and early 2000s. The move to teach values in school initially sparked debate about whose values and what values should be taught (Lovat & Toomey, 2009). The debate in the international arena subsided as policymakers finally decided to introduce a set of universal values to be taught in public school; The Character Education Partnership, Inc., 1996; The Council for Global Education, 1997 (Lovat & Toomey, 2009). After this development, later studies focused on the impacts of value education in schools.

Values Education

Valuing, in brief, is a process in which the student identifies with and accepts the standards or norms of the important individuals and institutions within his or her society.

Values education is an explicit attempt to teach about values and/or valuing in school settings. Some educators view values education from the perspective of inculcation, seeing values as socially- or culturally-accepted standards or rules of behavior. Values education is known by a number of names, including moral education (Malaysia & Australia), character education, and ethics education (Singapore) and Islamic education (Malaysia & Australia). Each variant has a slightly different meaning, pointing to its own distinctive emphasis. Overriding these differences, however, is a common theme born of a growing belief that teachers and schools have an increasingly important role to play in entering the world of personal and societal values.

In deciding which values will be taught in schools, each country deploys different strategies, including research and discussion with multi-religious consultative bodies. In the United States, the Josephson Institute of Ethics developed the following list of values: respect, responsibility, honesty, worthiness, caring, justice and fairness, and civic virtue and citizenship (1996). For its part, the Council for Global Education (1997) asserts the following set of values: compassion, courtesy, critical inquiry, due process, equality of opportunity, freedom of thought and action, human worth and dignity, integrity, justice, knowledge, loyalty, objectivity, order, patriotism, rational consent, reasoned argument, respect for others' rights, responsibility, responsible citizenship, rule of law, tolerance, and truth. In Australia, a report has suggested nine School values for Australian schools (Lovat & Toomey, 2009).

Values education draws on religious values prescribed by the scriptures as well as human values proposed by a number of social psychologists. Among the well-researched

values are those proposed by Rokeach and Schwartz. Rokeach (1973) conceptualizes what individuals and societies want to achieve (Rokeach, 1973; Schwartz, 2007). The importance of value is to serve as guiding principle in people's lives in various situation (Schwartz, 2007) and Malaysian school curriculum stated that the goal of values education is to develop a balanced and harmonious human being with high moral standards (Amla , Sharifah & Mahzan, 2014).

Values

Rokeach (1973) proposed that human values are comprised of two categories, terminal values and instrumental values. The first set, terminal values, refers to desirable end-states of existence, the goals that a person would like to achieve during his or her lifetime. Some of the terminal values proposed by Rokeach include true friendship, mature love, self-respect, happiness, inner harmony, equality, freedom, pleasure, social recognition, wisdom, salvation, family security, national security, and a sense of accomplishment. These values vary among different groups of people with multiple cultural backgrounds. The second set, instrumental values, refer to preferable modes of behavior for achieving the terminal values. Instrumental values include cheerfulness, ambition, love, cleanliness, self-control, capability, courage, politeness, honesty, independence, intellect, broad-mindedness, logic, obedience, helpfulness, responsibility, and forgiveness (Rokeach, (1973). Later, Schwartz, (2005) proposed ten basic values: self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, and universalism. These values were shaped by three universal requirements of the human condition: the needs of individuals as biological organisms, the requisites of coordinated social interaction, and the survival and welfare needs of groups.

As for religious values, belief in God as the Creator and the Sustainer of all his creations is the foundation of the value system. In Islam the goal of human existence is to worship Allah (Sh. Salleh al-Fozan, 1997). Value prescribed by the Holy book, the alQuran as in the case of Islam, serve as a guiding principle in one's relationship with God and in his relationship with his fellow human being as well as the environment including animals. Some of the value components of moral character stress on the following values; harmony, love, respect, cooperate, gratefulness, responsible, honest, just and tolerance.

Measuring Human Values Constructs

Studies on measuring value constructs gained global attention when Rokeach's classified value system was instrumentalised into the Rokeach Value Survey (RVS). The RVS has been translated and validated in many different countries using various samples

(Johnston, 1995; Debats, & Bartelds, 1996; Feather, 1986). These studies have examined several aspects of the survey's psychometric properties, including its constructs, structure, and items.

In their review of studies on RVS, Debats and Bartelds (1996) found that studies on RVS employed either the total of the RVS terminal and instrumental sub-scales, the sub-scales discriminated by Rokeach as operationalizing personal/social/competency/moral values domains, or the single RVS items (Debats and Bartelds, 1996). They added another dimension of RVS study by examining the structure of the 36 values. To achieve this objective, they used a principal components factor analysis followed by an orthogonal rotation varimax.

The ten human values suggested by Schwartz and colleagues (2001) also drew attention from researchers who examined the constructs across cultures using Schwartz's Portrait Value Questionnaire. For instance, researchers measured Schwartz's 10 value constructs (1990) using the Portrait Values Questionnaire (PVQ) on samples in South Africa (n = 3,210) and Italy (n = 5,867). They considered samples of 13- to 14-year-old Ugandan girls (n = 840), yielding structures of relations among values similar to the theoretical prototype (Schwartz, Melech, Lehmann, Burgess, Harris, & Owens, 2001). Ciecuch, Davidov, Vecchione and colleagues (2014) tested a new instrument (PVQ-5X) measuring Schwartz's refined value theory in order to measure 19 more narrowly-defined values. The study tested the measurement invariance of this instrument across eight countries. Configural and metric invariance were established for all values across almost all countries. Scalar invariance was supported across nearly all countries for 10 values. The analyses revealed that the cross-country invariance properties of the values measured with the PVQ-5X were substantially better than those measured with the earlier version of the PVQ (PVQ-21).

Azimi, Krauss, Noah, and colleagues (2007) have developed and tested a Muslim Religiosity Personality Inventory (MRPI) measuring Islamic practice among youth in Malaysia. The inventory has two subscales: Islamic worldview with 51 items (reduced from 74 items) and religious personality with 100 items (reduced from 141 items). These subscales were examined using factor analysis and supported by arbiter analysis. The study found that those who were more religious in the sense that they were more knowledgeable and observe more of religious values and practices were associated with more healthy life style compared to those in rehabilitation center for drug abuse and other minor crimes. Applying the same methodology of factor analysis (PCA) Abdullah Sahin (2013) measured attitude towards Islam and Islamic identity development among Muslim youth in Britain and Kuwait using 26 items instrument – You and Your Faith

Questionnaire to compliment his qualitative method. As in Hamzah et al's study Sahin's study found that youth's attitude towards Islam varies according several factors such as age, exposure to Islamic knowledge, formal/informal Islamic education which include parental guidance. Five factors of faith orientation were identified. They are strong faith orientation, inspirational faith orientation, self-focus faith orientation, socially-aware faith orientation, self-conscious Faith orientation. Both studies focus on general practice and attitude toward Islam without referring to specific values

Most studies assessing values constructs and structure used factor analysis with the principle component and varimax rotation. Schwartz (2007) used discriminant and convergent validity in his study to examine the relationship among constructs. The present study used a more robust structural equation modeling (SEM). The SEM is a multivariate statistical approach to test the causal relationships among variables (Gall, Gall, & Borg, 2005). One of the primary advantages of SEM, compared to other applications of the general linear model, is that it can be used to study the relationships among latent constructs that are indicated by multiple measures. It is also applicable to both experimental and non-experimental data as well as cross-sectional and longitudinal data. SEM takes a confirmatory (hypothesis testing) approach to the multivariate analysis of a structural theory, one that stipulates causal relations among multiple variables (Lei & Wu, 2007).

In the current study, to verify individual item reliability, a confirmatory factor analysis (CFA) was performed on independent and dependent variables of the theoretical research model. A single iteration of the CFA was necessary, given that all loadings of the variables were superior to 0.50, and no item was withdrawn or transferred into another variable in which the loading would have been higher. In general, items had high loadings, which suppose a high level of internal consistency of their corresponding variables. In addition, loadings of each variable were superior to cross-loadings with other variables of the model.

Background of the Study

In Malaysia, public education always has played a key role in promoting values, particularly national unity, progressive and disciplined citizenship, and religious and moral values (Balakrishnan, 2009). Therefore, values have been the essence of the school curriculum. Two education reports (Razak Report, 1956; Rahman Talib Report, 1960) recommended values education to promote national unity and to develop progressive and disciplined Malaysian citizens.

In 1982, various groups within and outside the Ministry of Education embarked on planning a national philosophy of education that would provide the foundation of the educational system in Malaysia (Langgulung, 1993). This effort aimed to produce knowledgeable and competent Malaysian citizens who possess high moral standards and who are responsible and capable of achieving a high level of personal wellbeing while contributing to the betterment of society and the nation at large (Ministry of Education Malaysia, 1989).

The values education policy was translated into three stand-alone subjects: Islamic education (Islamic conduct), moral education (for non-Muslim students), and local studies. To carry out this mission, the strategy involved making Islamic education and moral education the school subjects in school. Islamic education is compulsory for Muslim students, while moral education is compulsory for non-Muslim students. The National Framework articulates the process for schools to engage in the whole school values education programs. It also presents a vision for common values in Malaysian schools, identifying 16 universal values:

1. Belief in God;
2. Honesty: Be honest, sincere, and seek the truth;
3. Self-respect, identity, and self-esteem;
4. Responsibility: Be accountable for one's own actions, resolve differences in constructive, non-violent and peaceful ways, contribute to society and to civic life, take care of the environment;
5. Wisdom/politeness: Be civilised and polite;
6. Tolerance: The willingness to compromise, be patient, and exercise self-control for harmonised living;
7. Independence: Not having to rely on others;
8. Industriousness: Diligence and hard work in achieving one's goals;
9. Love: Showing positive feelings towards others and environment and country;
10. Justice: Pursuing and protecting the common good where all people are treated fairly for a just society;
11. Rationality: Developing critical thinking;
12. Moderation: Not being arrogant;
13. Cleanliness: Hygiene, living in clean environment, and consuming clean food;
14. Health: Taking care of one's health;
15. Safety/security: Awareness of the importance of one's safety and others' safety;
- and
16. Sincerity

Purpose

As there is no measurement to assess the extend of value teaching in school both in formal classroom setting and informal setting outside the classroom, therefore knowledge in this area is very limited. To fill the gap, the present study was designed to develop and examine the psychometric property of an instrument measuring values teaching in Malaysian schools which is called Malaysian School Value Scale (MSVS). This study is a part of a larger study that measures the impact of value education in school. The purpose of the present study is to identify the convergent and discriminant validity of the MSVS and to investigate the reliability of these scales in secondary schools in Malaysia.

METHOD

Participants

The questionnaire was distributed among 400 year-four respondents from four high schools in Selangor state in Malaysia. One of the schools was a national Chinese school where the student population was Chinese. Another institution was an Islamic religious school where the student population was Malay and Muslim; the other two were national schools where the population was a mixture of Malay, Chinese, and Indian. Data was collected from students of three major races: Malay (247 [60.5%]), Chinese (102 [25%]), and Indian (51 [12.5%]), with (6 [2%]) other. The participants were current or active students in secondary schools (boys 190 [46.6%]), girls (218 [53.4%]). Participants were selected from secondary schools using a stratified random sampling method in order to represents various types of schools in the state of Selangor in Malaysia. A total of 400 participants were selected using Krejcie and Morgan's (1970) sampling size table

Instrument – The Development of the Malaysian School Value Scale (MSVS)

An initial 45 items was developed to measure 15 values (honesty and sincerity were collapse into one) inculcated in school as prescribed by School curriculum. In addition, the assessment added 19 items measuring students' beliefs and 28 items measuring students' values practices. The belief and practice scales were developed to measure the extent of students' positive behaviors aligned to the 15 School values taught in school. An expert panel discussed these items in terms of content validity and construct coherence. This panel consisted of two professional counselors, two school curriculum experts, an educational media expert, and a technical vocational education expert. After one round of discussion and one rephrasing session requiring a minimum of three items per construct, the final 92-item questionnaire was accepted for piloting. Items are comprised of statements with which respondents are asked to express agreement or disagreement by selecting one of five labeled choices (strongly disagree, disagree, neutral/undecided, agree, strongly agree).

The final school Value scale measure students' value using three major constructs i) School Inculcated School values, ii) Beliefs, and iii) Practice . There were a total of 92 items (45 for School inculcated values, 19 for belief, 28 for practice and). The school inculcated values has 15 dimensions, namely belief in God, honesty, self-esteem, responsibility, politeness, tolerance, independence, diligence, love, justice, rationality, moderation, hygiene, health, and safety. In addition, Belief had three dimensions: religion, self, and social. while, Practice was divided into five dimensions: self, family, environment, citizenship duty, and community. A pilot test of MSVS was conducted on 40 respondents to test the validity and reliability of the instrument. The reliability was higher than 0.7.

The study followed standard regulations in obtaining consent by obtaining permission from the Ministry of Education and individual school principals. As the questionnaire was distributed during class hours, the students were advised to inform their parents. Students also were assured of the confidentiality of their responses.

Data Analysis

Data was analyzed using descriptive statistics and Structural Equation Modeling (SEM) for determining the relationship among variables (Pui-Wa & Wu, 2007). SEM is an extension of the General Linear Model (GLM) and is used more as a confirmatory technique than an exploratory technique; to confirm models rather than to discover new ones (Garson, 2012). SEM is used to test 'complex' relationships between observed (measured) and unobserved (latent) variables and relationships between two or more latent variables. In this study, SEM is used in the measurement model for the 15 dimensions of School values, practices, and beliefs.

RESULTS

Descriptive Analysis

This study examines the Malaysian School Value Scale with three sub-scales: School Inculcated value scale, belief scale, and practice scale, with a total of 92 items. All dimensions have a minimum of three items. As described earlier, school inculcated values are measured through 45 items comprised of 15 dimensions: belief in God, honesty, self-esteem, responsibility, politeness, tolerance, independence, diligence, love, justice, rationality, moderation, hygiene, health, and safety. Each of the School value dimensions was measured with three items in 5-point Likert scale measurement ranging from 1 = "Strongly disagree" to 5 = "Strongly agree". The following discussion present the descriptive findings of the three subscales:

School Inculcated Values

Using 45 items measuring 15 school values, the analysis indicated that the most important dimension, according to students, was love with an overall mean of 13.34. The next most important was honesty with 13.32, followed by belief in God with an overall mean of 13.15. Health and hygiene held the least importance with overall means of 10.7 and 10.38, respectively.

Students' Beliefs

To measure the beliefs of the secondary school students, 19 items were applied based on a five-point Likert scale (ranging from 1 = "extremely unimportant" to 5 = "extremely important"). Belief had three dimensions: the religion dimension had five items, the social dimension had three items, and the self dimension had 11 items. The most important dimension was religion, with a 4.68 overall mean; followed by social, with 4.57; and self, with 4.54.

Within religion, the most important item was "belief in the existence of God as the creator" ($M = 4.71$, $SD = 0.67$) followed by "adhere to religion" ($M = 4.70$, $SD = 0.60$). In the social dimension, the most important item was "care for personal safety" with ($M = 4.70$, $SD = 0.60$). The least important in the social dimension was "When I help, I do not expect a reward" ($M = 4.37$, $SD = 0.77$). The least important dimension was the self dimension. Within this dimension, the most important statement was "self-esteem: honor and protect dignity in life" ($M = 4.72$, $SD = 0.54$) followed by "take care of health and well-being" ($M = 4.69$, $S.D = 0.59$)

Students' Values Practice

Students' values practice was measured with 28 items within five dimensions: self, family, environment, citizen duty, and community. Each item was measured using a five-point Likert scale (ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree"). The family dimension had four items; community had six items; self and citizen duty had seven items each; and environment had four items. As illustrated in Table 3 the most important dimension was family with 4.43, followed by community with 4.21. The students noted the environment as the least important, with a 3.43 overall mean, a finding that indicates that students feel more strongly about their families and communities.

Discriminant Validity

Discriminant (also referred to as divergent) validity is evidence that a measure is not unduly related to other similar, yet distinct, constructs (Messick, 1989). In other words, it is the extent to which a construct is really different from other constructs with respect to

theoretical content. Discriminant validity is demonstrated when the Average Variance Extracted (AVE) of any constructs is greater than the squared correlation between the two constructs. Fornell and Larcker (1981) assert that a researcher can compare the AVE of each construct with the shared variance between constructs in order to assess the discriminant validity of two or more factors. If the AVE for each construct is greater than its shared variance with any other construct, discriminant validity is supported. Based on this criterion, which has been used in many studies, results of the present study showed that discriminant validity is adequate for the Malaysian School Value Scale (MSVS). A consequence of strong discriminant validity is that each measured indicator represents only one construct (absence of cross loadings) (Groenland & Stalpers, 2012). A construct will have adequate discriminant validity if the AVE exceeds the squared correlation among the constructs (Fornell. & Larcker., 1981; Hair, Black, Babin, Anderson, & Tatham, 2006). Table 4 demonstrates that the AVE for each construct is greater than the squared correlation between that construct and the other two constructs. Furthermore, in order to prove the discriminant validity of a construct, Maximum Shared Variance (MSV) and Average Shared Variance (ASV) should be below AVE. As indicated in Table 1, MSV and ASV are below AVE. Therefore, discriminant validity is adequate for school values, practices, and beliefs. The construct reliability and validity for the current study was calculated using Stat Tool Package (Gaskin, 2012).

Table 1

Discriminant Validity

Manifest (Observe) Variable	MSV	ASV	School Value	Practice	Belief
School cultivated School Value	0.393	0.255	0.723		
Practice	0.393	0.363	0.627	0.740	
Belief	0.333	0.225	0.341	0.577	0.923

Convergent Validity

Convergent validity refers to a set of variables that presume to measure a construct (Kline, 2005); it is also the extent to which the indicators of a construct share variance. In order to assess convergent validity, the Average Variance Extracted (AVE) is calculated on the basis of path estimates. As path estimates ideally should be 0.7 or higher, AVE should be 0.5 or higher (Groenland & Stalpers, 2012). An additional indication of convergent validity is reliability, which refers to the degree to which a set of indicators of a latent construct is internally consistent in its measurements. Reliability can be assessed by computing 'coefficient alpha', or CR (Construct Reliability). CR ideally should be 0.7 or higher, and is highlighted when reporting the results (Groenland & Stalpers, 2012). The results in Table 2 show that Composite Reliability (CR) is between 0.942 to 0.827 in this research. Average Variance Extracted (AVE) is another name for convergent validity. A

high AVE (>0.5) indicates a high convergent validity (Fornell & Larcker, 1981). High factor loadings (≥ 0.5) on a factor also indicate high convergent validity (Hair, Black, Babin, & RolphE, 2006). Thus, the results indicate that convergent validity (AVE) and Composite Reliability (CR) exist for the constructs of this study. Furthermore, all factor loadings are above 0.5 for all constructs (Table 2).

Table 2
Results of Convergent Validity

Construct and Indicators (Items/Parcels)	Standard Factor Loading (>0.5)	Composite Reliability (>0.7)	Average Variance Extract (AVE) (>0.5)
School Cultivated School			
Value			
Health	0.515	0.942	0.523
Safety	0.685		
Diligence	0.836		
Belief in God	0.739		
Honesty	0.766		
Self-esteem	0.814		
Responsibility	0.763		
Prudence	0.741		
Independence	0.671		
Tolerance	0.751		
Love	0.779		
Justice	0.653		
Rationality	0.706		
Moderation	0.769		
Hygiene	0.586		
Practice in Life			
Family	0.659	0.827	0.547
Environment	0.688		
Community	0.811		
Self	0.788		
Belief			
Self	0.948	0.920	0.853
Social	0.898		

SEM was performed to test overall fit and acceptability of the MCVS model in Malaysia. Therefore, in evaluating the overall goodness of fit for the model, chi-square/df (ratio) value was used, as suggested by Hooper, Coughlan, and Mullen (2008). They pointed out that chi-square is a traditional measure for evaluating overall model fit that

tests whether the covariance matrix of the original variable is different from the proposed matrix. A good model fit would provide an insignificant result at a .05 threshold (Barret, 2007). An insignificant p value means that there is no statistically significant difference between the observed data and the hypothesized model and the chi-square/df (ratio). The recommended ratio is ranged from as high as 5.0 to as low as 2.0 (Hooper et al., 2008). In this study, the ratio obtained is below 3, indicating a significant value ($627.269/182=3.409$). RMSEA (Root Mean Square Error of Approximation) is another criteria measuring the goodness of fit for a model. There is good model fit if RMSEA is less than or equal to .05. There is adequate fit if RMSEA is less than or equal to .08. Hu and Bentler (1995) suggested that values below .06 indicate good fit. The RMSEA values are classified into four categories: close fit (.00 – .05), fair fit (.05 – .08), mediocre fit (.08 – .10), and poor fit (over .10). In general, multiple goodness-of-fit tests are used to evaluate the fit between the hypothesized model (Figure 1) in order to accept or reject the study model (Abedalaziz, Jamaluddin, & Leng, 2013). Fit indexes show that the model met the cut-off criteria and can be considered a fit model. Root Mean Square of Error Approximation (RMSEA) is .07, which shows a fair fit (Hu & Bentler, 1995). The Comparative Fit Index (CFI) and Incremental Fit Index (IFI) are more than .9 and are acceptable (Hair, Black, Babin, & Anderson, 2010). These items fit the measurement model with $\chi^2 (182) = 627.269$, $p = 0.00$, $\chi^2/DF = 3.409$, GFI = 0.852; AGFI = 0.814, CFI = 0.92; IFI = 0.921, and RMSEA = 0.077.

The analysis shows that the most important category in the respondents' view was diligence because it has the highest factor loading among all categories of School values followed by self-esteem and independence. The least important factor loading was hygiene. The categories of justice and rationality, hygiene and health, and belief in God and honesty were merged as they were considered one category (Figure 1). After modification, two sub-dimensions was deleted. Citizenship duty belongs in the practice dimension, and religion belongs to belief dimension because the factor loadings were below 0.5.

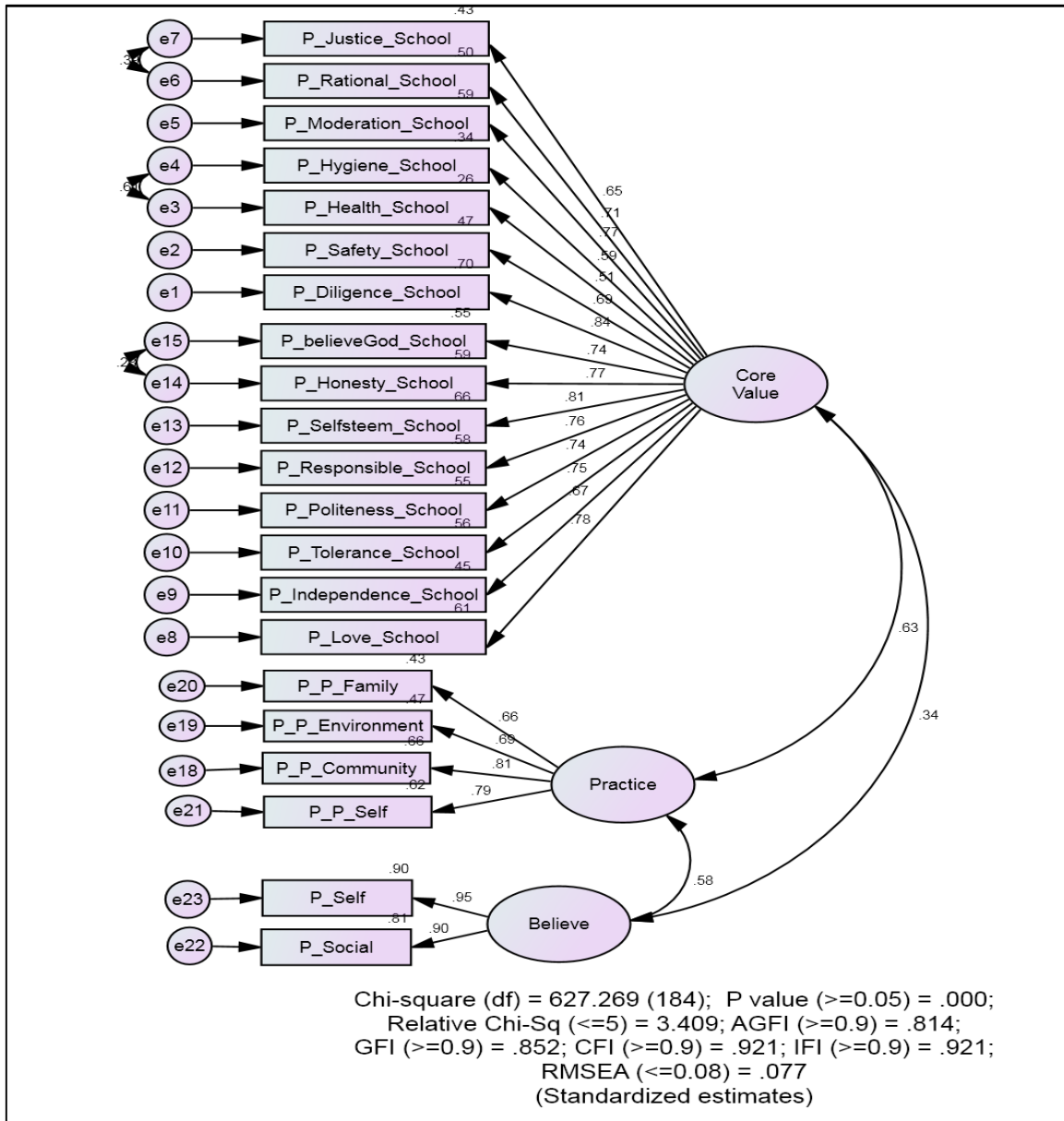


Figure 1. Measurement construct CFA model.

Based on the Table 3 in general all dimensions of values had effect on practice and belief constructs each at varying degrees. The relationship between school cultivated School value and belief was significant and positive ($B=0.349$, $p<0.05$) with 34% prediction. In addition, the relationship between school cultivated School value and practice was significant ($B=0.657$, $p<0.05$) with 65% prediction.

All the four dimensions of practice construct, including family, self, environment and community have positive effects by the practice. The relationship between family and practice was significant and positive ($B=0.64$, $p<0.05$) with 64% prediction, the relationship between self and practice was significant with 77% prediction ($B=0.772$, $p<0.05$). Furthermore, environment and practice was significant with 69%.

The highest influence of school cultivated School value was on diligent with 80% prediction, followed by moderation with 78%. The relationship between school cultivated School value and politeness and tolerance was positive and significant with 75% prediction. The impact of School value on honesty, love and responsible was the same with 74%. The relationship between school cultivated School value and rational and safety was significant and positive with 72% and 70% respectively. Lower prediction was found between school cultivated School values in the relationship with independence, justice and hygiene which were positive and range between 67% to 62% respectively. The last and least impact of school cultivated School value was on health with 54% prediction.

Table 3

Standard estimate for final model (School Cultivated values)

Items	B	S.E	β	C.R	P value
School cultivated Value ----> Belief	0.332	0.051	0.349	6.572	***
School cultivated Value ----> Practice	0.544	0.051	0.657	10.63	***
Practice----> Family	0.85	0.082	0.644	10.393	***
Practice----> Self	1.031	0.065	0.772	15.921	***
Practice----> Environment	1.363	0.124	0.69	10.997	***
School cultivated Value ----> Diligence	1.152	0.073	0.806	15.856	***
School cultivated Value ----> Moderation	1.229	0.079	0.789	15.531	***
School cultivated Value ----> Politeness	1.145	0.077	0.752	14.806	***
School cultivated Value ----> Tolerance	1.103	0.075	0.752	14.805	***
School cultivated Value ----> Honesty	0.973	0.054	0.748	17.968	***
School cultivated Value ----> Love	0.972	0.066	0.746	14.646	***
School cultivated Value ----> Responsible	1.033	0.071	0.741	14.575	***
School cultivated Value ----> Rational	1.127	0.079	0.726	14.266	***
School cultivated Value ----> Safety	1.236	0.089	0.703	13.815	***
School cultivated Value ----> Independence	1.015	0.076	0.679	13.353	***
School cultivated Value ----> Justice	1.161	0.088	0.669	13.127	***
School cultivated Value ----> Hygiene	1.209	0.099	0.624	12.242	***
School cultivated Value ----> Health	1.103	0.103	0.547	10.726	***

The result of assessing structural model fits indicated that the data fit with the model with: χ^2 (163) = 566.885, χ^2/DF = 3.478, p =.000, GFI=0.833, CFI=0.921; IFI=0.922, AGFI=0.833; RMSEA= 0.078. The Goodness-of-fit indices of structure model showed that CFI and IFI were significantly close or passed the cut-off value (0.9). In addition, the RAMSEA was 0.078, which fell within the recommended range (Figure 2).

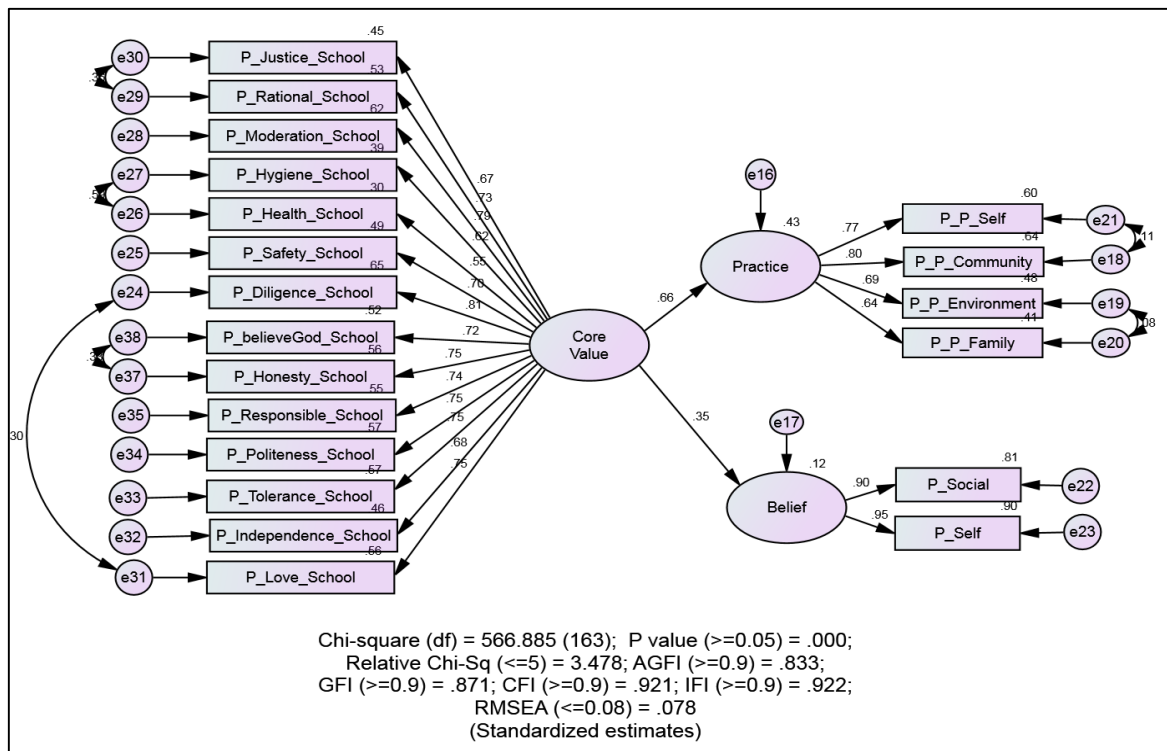


Figure 2. Overall structural model of School value and practice and belief with standardized path coefficients

Our first analysis shows that the instrument is valid and the measurement model in both, convergent and discriminant, illustrated that all the three sub-scales (School value, practice in life and belief) valid. All the relationship between School value and practice and belief are positive and significant in varying degrees.

DISCUSSION, CONCLUSION AND SUGGESTIONS

In the measurement model the overall composite reliability analysis showed that the data is reliable. However, the test of convergent and construct validity was further improved through the SEM approach. The results of the discriminant validity testing indicated that the MSVS is adequate for School value, practices, and beliefs. In addition, the findings showed that convergent validity (AVE) existed for all constructs in this study. In summary, higher standardized factor loading and higher AVE percentage values for endogenous variables enable examination of the significance of research variables more precisely, thus improving data analysis. Because measurement for this study is reliable and valid for School values, it can be used for further studies in Malaysia. It also can be applied to other countries for measuring School values and making comparisons.

These results also show that the model is fit. In general, multiple goodness-of-fit tests are used to evaluate the fit between the hypothesized model in order to accept or

reject the study (Abedalaziz, Jamaluddin, & Leng, 2013). Fit indexes show that the model met the cut-off criteria, and it can be considered a fit model. Root Mean Square of Error Approximation (RMSEA) is .07, which shows a fair fit (Hu & Bentler, 1995). The Comparative Fit Index (CFI) and Incremental Fit Index (IFI) are more than .9, which is acceptable (Hair, Black, Babin, & Anderson, 2010). The most important category from respondents' view was diligence, and the least important category was hygiene. Some categories were given same meaning by respondents for example justice with rationality, hygiene with health, and belief in God with honesty. In order to fit the model, adjustments have to be done. Therefore after modification, two sub-dimensions namely citizenship duty (from practice dimension), and religion (from belief dimension) were deleted as the factor loading was below 0.5.

The paper concludes that the present study provides evidence that the MSVS is fit to describe School values constructs of Malaysian school children. Hence, the instrument is psychometrically sound with two dimensions of the subscale reduced. The findings also provide initial evidence of the existence of 15 values constructs taught in school. Clearly, the MSVS is a reliable and valid tool for measuring the 15 school values in Malaysian schools. The findings imply that the MSVS could be used by school personnel in understanding student developmental processes, and by researchers in developing knowledge on Malaysian school values.

We note several limitations of the present study. Firstly, the sample is exclusive to a group of high school students aged between 15 and 16 years old. Therefore, the results cannot be generalised to other populations. In the future, further research replicating the present study is required with larger and different samples for the MSVS. Such research will not only confirm the present findings but also enable the results to be generalized to the youth population in Malaysia. Extending the sample to teachers and other school personnel also will confirm the present school values measurement model. Secondly, the setting was limited to school; thus, we cannot determine whether family factors or the environment has contributed to the development of such values. We suggest a combination of qualitative and quantitative methodology for future research. Such a mixed methodology could assist in obtaining a better understanding and comprehensive picture of Malaysian schools School value measurement model.

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Comparison of Turkish Elementary School Science Curriculum: 2005-2013-2017

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Abstract:

Change is an inevitable reality of life. The developments in the world affect the qualities expected from individuals and this reflects on the educational systems. For this reason, the high competitiveness of the countries in the international arena requires that the education systems comply with the requirements of the age. In Turkey, it is seen that the curriculum has been changed in various times since the announcement of the Republic. In 2005, a major change was done and the curriculum was prepared in line with the philosophical and structural approach as well as the requirements of the age. These programs were updated in 2013 by reviewing the 4 + 4 + 4 education system which was designed in 2012. In 2017, the curriculum has been updated with stakeholder's feedback in line with the problems faced by previously developed programs and practices. In this context, the aim of the study is to compare the elementary school science curriculums which were prepared based on the constructivist approach in 2005, updated in 2013 and re-revised in 2017, and to reveal their similarities and differences. In the study, the elementary school science curriculums (2005-2013-2017) were compared by investigating in terms of basic philosophy of the curriculum, the general aims of the curriculum, key competences in the curriculum, and the approaches during the teaching situations, the evaluation process, the subject areas, the achievements and the course hours. The research was carried out by document analyzing method of qualitative research methods. As a result of the study, we found out that while there was not much difference between primary school sciences curriculums in 2013 and 2017, there was a great deal of differences between the 2005 curriculum and the 2013 and 2017 curriculum especially in the number of achievements and course hours.

Keywords: Science curriculum, curriculum evaluation, elementary school

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INTRODUCTION

Currently, educational institutions prepare students for globalization and competitiveness in the 21st century, enable students to acquire a good science education. Rather than training only science-related and health-related career goals oriented students, programs should be designed to ensure that all students benefit from skills (such as critical thinking, analytical thinking, innovative thinking, inquiry, research, investigation, exploration, experimentation, data analysis, inventing, collaborative team work, leadership, social responsibility, oral and written communication) that science curriculum can provide. Qualified science education has an important place in students' 21st century skills (Biological Sciences Curriculum Study Organization [BSCS], 2008). For this reason, importance is given to science education both abroad and in our country, and studies are being carried out with the reforms carried out in education to train science literate individuals (Bağcı-Kılıç, Haymana ve Bozyılmaz, 2008). However, despite the radical changes and innovations in the science curriculum in our country, the desired achievement on the international scene has not been reached and according to the final Program for International Student Assessment (PISA, 2015) results report, our country is far behind in the field of science literacy, it is seen to be in the lower rank among the participant countries (Organisation for Economic Co-operation and Development [OECD], 2016; Taş, Arıcı, Ozarkan, Özgürlük, 2016). For this reason, the current curriculum should be examined again and / or the approaches applied in the teaching-learning process should be revised and / or teachers' conceptions of learning and teaching in the classroom should be reviewed.

Change is an inevitable reality of life. Countries, cultures, ways of thinking and production, relations and nature are constantly changing. The person himself is also a lifetime, constantly changing from birth to death (Erdoğan, 2012). This is a natural consequence in the world; social, economic and technological developments, a change and transformation based on knowledge is realized (Gürbüz, 2011). It is not possible to think education system independently of developments in other areas, change and transformation (Özden, 2005). This change and transformation in the world, of course, also affects the education systems and, as a result, the aims and content of education; the roles of teachers and the school as an organization for learning needs to be reconsidered (Council of Europe, 2015). This change and transformation in the world in the 21st century differentiates the qualities of the individuals needed and causes the questioning of the education offered in the schools. In this respect, it is necessary to update the curriculums of the guidance programs offered to the schools in the direction of the developments taking place in the century we live and the developments anticipated in the future.

In 2005, the Ministry of National Education created curriculums according to constructivist understanding, updated the curriculums in line with the 4 +4 +4 education system introduced in 2013, and partially revised the curriculum in 2017 as a result of evaluations.

Purpose

The aim of the study is to compare the elementary school science lesson teaching curriculums which were designed based on the constructivist approach in 2005, updated in 2013 and re-revised in 2017 and to reveal the similarities and differences. In this direction, in this study, the elementary school science curriculums (2005-2013-2017) will be compared by investigating in terms of basic philosophy of the curriculum, the general aims of the curriculum, key competences in the curriculum, the approaches during the teaching situations, the evaluation process, the subject areas, the achievements and the course hours.

METHOD

Research Model

In the research, document analysis which is one of the qualitative research methods and one of the data collection methods was used. Document analysis is a form of qualitative research in which documents are interpreted by the researcher to mean around an evaluation topic (Bowen, 2009). In the document review method, the researcher analyzes the written materials that contain information about facts or phenomena intended to be investigated (Yıldırım ve Şimşek, 2008). Electronic resources, on the other hand, are the evaluated sources considered in the scope of the document review (Corbin & Strauss, 2008).

Data Collection Tools

Documents to be examined before the research were determined and 2005, 2013 and 2017 primary school science curriculums were used as data sources. In this respect, 2005, 2013 and 2017 primary school science curriculums were electronically obtained from the webpage of Education Board of Ministry of Education (<https://ttkb.meb.gov.tr>). The study was carried out in the direction of the data whose originality was checked.

This research was carried out by using;

- ❖ The curriculum of primary school science and technology curriculum for 4th and 5th gradess published in 2005 (Ministry of National Education [MEB], 2009)
- ❖ The science curriculum of primary schools and junior high schools published in 2013 (MEB, 2013).

- ❖ The science curriculum for elementary and secondary schools published in 2017 (MEB, 2017)

Data Analysis

The data obtained in the research were analyzed by descriptive analysis method. Descriptive analysis is the lowest and simplest form of analysis. Descriptive analysis is a kind of discussion where the data is shown as it is, described, figured, told, and communicated (Sönmez & Alacapınar, 2013). The purpose of descriptive analysis is to convert raw data into a format that readers can understand and use if needed. The data obtained in the descriptive analysis are summarized and interpreted according to the previously determined theme (Altunışık, Coşkun, Yıldırım & Bayraktarođlu 2001; Yıldırım ve Şimşek, 2005).

2013 and 2017 primary science sciences curricula were examined in order to create descriptive statistics in the research. The curriculums have been compared and tabulated in terms of basic philosophies, general objectives, basic skills dealt with in the curriculums, approaches in educational situations, evaluation process, subject areas, achievements, class hours and class hours percentages. The differences in the curriculums have been explained and the reasons that constitutes the basis of these differences are examined.

RESULTS

In this section, according to the main objectives of the research 2005, 2013 and 2017 science curricula of primary schools have been compared and evaluated in terms the program's vision / basic philosophy, general objectives, teaching-learning and evaluation process, basic approaches to student and teacher role, subject areas and units, subjects and achievements, course hours.

The vision of the 2005 curriculum; (MEB, 2005) that all students are educated as science and technology literate regardless of their individual differences. The vision of the 2013 education program is to educate all students as science literate individuals (MEB, 2013). In the 2017 curriculum, the vision of the program was not addressed, and the basic philosophy of the program was touched upon.

The basic philosophy of the 2017 curriculum is; to enable individuals to gain skills, such as ability, attitude, aesthetic sensitivity especially national, spiritual and cultural values where the individuals were born into, to raise curiosity to lead the individual to learn, to develop consensual individuals who have responsibility to play an active role in today's social and economic conditions, who can solve problems, have advanced decision-

making skills, think critically and innovatively, cooperate, respect person's rights and freedom, to develop individuals who are in harmony with themselves and their society, who are aware of their responsibilities and who can fulfill their needs, who have internalized national values on the one hand and internalized universal values on the other, to develop individuals with critical and innovative thinking skills and a new understanding, original approaches, new perspectives, a way of thinking leading to brand new ways of understanding and appreciation of something and aesthetic sensitivity (MEB, 2017). Within the scope of the general objectives of the curricula; the overall objectives of the science curriculum for the 2005, 2013, and 2017 are comparatively discussed in Table 1.

Table 1

General Objectives of 2005, 2013 and 2017 Science Curriculum

<i>2005 Curriculum</i>	<i>2013 Curriculum</i>	<i>2017 Curriculum</i>
To enable to learn and understand the natural world, to enable them to live with this intellectual richness and excitement.	To give basic information about biology, physics, chemistry, space, sky and environmental sciences, health and natural disasters.	To give basic information about astronomy, biology, physics, chemistry, space and environmental sciences and science and engineering applications
Encourage them to develop curiosity for scientific and technological developments and events at every class level.	To adopt scientific process skills and scientific research approach and find solutions for the problems encountered in the process of discovering nature and understanding the relationship between man and environment.	To adopt scientific process skills and scientific research approach and find solutions for the problems encountered in the process of discovering nature and understanding the relationship between man and environment.
The nature of science and technology; to enable to understand the interactions between science, technology, society and the environment.	To raise awareness of how science affects society and technology, and how society and technology affect science.	To enable to recognize the mutual interaction between individual, environment and society; to develop sustainable development awareness of society, economy and natural resources.
To enable to acquire new knowledge structuring skills through research, reading and discussion.	To recognize the mutual interaction between the individual, the environment and the society and to develop awareness of sustainable development in society, economy, natural resources	To enable to take responsibility for everyday life problems and to use science knowledge, scientific process skills and other life skills to solve these problems
In the topics such as education and occupation selection to create a sub-structure that can enable them to create information, experience, interest	To develop science-related career awareness.	To develop career awareness and entrepreneurial skills related to science
To enable to learn to learn and to develop the capacity to adapt to the changing nature of the professions	To enable to take responsibility for everyday life problems and to use knowledge of science, scientific process skills and other life skills to solve these problems	To help them to understand how scientific information is created by the scientist, the processes in which this information is generated, and how it is used in new researches
To enable them to use science and technology to obtain new information and solve problems in unusual situations where they may encounter	To help them to understand how scientific information is created by the scientist, the processes in which this information is generated, and how it is used in new researches.	To raise interest and curiosity about the events that are happening in the nature and around them, develop attitudes.
To enable them to use appropriate scientific processes and principles when making personal decisions	To contribute to the understanding that science is the result of common endeavor of scientists from all cultures and to develop a sense of appreciation of scientific studies	To establish safe working awareness by recognizing the importance of safety in scientific studies
To enable to realize the social, economic and ethical values related to science and technology, personal health and	To ensure to appreciate science for its contribution to the development of technology, the solution of social	To develop reasoning ability, scientific thinking habits and decision making

environmental problems, to enable to take responsibility for them and to make conscious decisions	problems and the understanding of relationships in the natural world.	skills by using socio-scientific subjects
To have scientific values such as willingness to know and to understand, questioning, valuing logical value, thinking about the consequences of actions, to enable them behave in accordance with these values in society and environment relations	To develop curiosity, attitude and interest about the events that take place in the nature and to develop scientific thinking habits using socio-scientific issues	To ensure that universal moral values, national and cultural values and scientific ethical principles are adopted.
To enable them to increase their economic efficiency by using knowledge, understanding and skills in their professional life	To enable them to recognize the importance of safety in scientific studies and to contribute to implementation	

In the 2017 curriculum, unlike the 2005 and 2013 curricula, the basic skills required to be acquired by the curricula are mentioned. These skills are; basic competence in communication in mother tongue and foreign languages, mathematics, key competence in science and technology, digital competence, learning to learn, social and civic competence, initiative and entrepreneurship, cultural awareness, scientific process skills, life skills, engineering and design skills. Again, in the 2017 curriculum, values education has been introduced differently from other curriculums.

The 2005 curriculum is based on a constructivist learning approach that adopts a student-centered approach. The 2013 and 2017 curriculum is also based on a student-centered approach; but learning environments were designed to be based on learning-based inquiry, problem solving, project, argumentation and collaborative learning. The understanding of measurement and evaluation is similar in all three programs. The evaluation of the process as well as the learning outcomes, and mainly alternative assessment and evaluation techniques which enable students to exhibit their knowledge, skills, feelings and other performances rather than traditional measurement and evaluation techniques are suggested to be used. At the same time, self and peer assessment approaches are also adopted where students can evaluate themselves and their peers. Also, in 2013 curriculum, it is recommended that technological tools be used to monitor and assess the performance of students during the learning process. In the 2017 curriculum, it is suggested that measurement-evaluation should be carried out as recognition, monitoring-shaping, result (product) oriented and that individual differences should be carefully considered in assessment and evaluation activities. Moreover, assessment-evaluating is not always about judging students; they should be in the form to lead them by supporting their academic, social or cultural development.

In all three curricula, teacher and student roles are treated in a similar way in general. The students are active in the process and the teacher is in the guiding role. The responsibility of the learning belongs to the student. It is expressed that while the teacher in the learning-teaching process is in encouraging and directing role, the students are in

individual role of explaining the source of information, questioning, explaining, discussing and transforming into the product. For this reason, it is mentioned that the teachers have a guiding role and share the value of science and its importance and the responsibility and enthusiasm of reaching out to the scientific knowledge and at the same time guide the research process in the class. Also in 2017 curriculum, it is aimed to enable students to look at problems from an interdisciplinary point of view by the integration of science with mathematics, technology and engineering. It is advised that teachers also should provide guidance in this issue. In addition, it is stated that teachers make contributions for creating a democratic classroom atmosphere in which students can express their views freely, the development of students' ability to express their own thoughts, and the development of reasoning and communication skills in the learning environments. In the 2017 curriculum, engineering applications that are not included in other programs are included. Through engineering applications, students are expected to establish connections between engineering and science, understand interdisciplinary interactions, and develop worldviews by bringing in what they learn in an experiential way.

While the subject areas in 2005 and 2013 curriculum are expressed as "the livings and life", "matter and change", "physical events", "world and universe", in 2017 curriculum the subject areas are "world and universe", "living things and life", "physical events", "matter and nature", "science and engineering applications". The subject areas of the three curriculums, unit titles, number of achievements, and information about the prescribed hours are given in Table 2.

When Table 2 is examined, it is seen that the numbers of acquisitions in the 2005 program are much more than the programs of 2013 and 2017. Depending on the number of acquisitions, the difference in the course hours is clearly visible. The number of acquisitions in the 2013 and 2017 curricula has been reduced considerably and the course hours have been increased compared to the acquisitions. In addition, when examining the unit headings, it can be said that the unit headings in the 2017 curriculum are expressed more simply and concretely than the 2005 and 2013 curriculum, in other words, the subjects are simplified.

With 4 + 4 + 4 education system which started to be implemented in 2012, primary school was reduced to 4 years and primary school science courses have also been included in classes 3 and 4. The science courses, which begin in the 3rd grade of primary school in 2013 and 2017 curriculums, begin with the subject of "Five Senses" in the subject area of "Living Things and Life" in 2013 curriculum, begin with the subject of "Getting to know our planet" in the subject area of "World and the Universe" in 2017 curriculum.

In 2005 Curriculum the courses begin with the subject of "Resolve our Body's Wisdom" in the subject area of "Living Things and Life" in the fourth grade of primary school. In the curriculums, topics are similar except for the first ones. Some topics are more clearly expressed in the 2017 program.

For example, in 2013 Curriculum, the unit titled "From Past to Present Illumination and Sound Technologies" is expressed as "Illumination and Sound Technologies" in 2017 Curriculum; the unit titled "Let's Solve The Puzzle of Our Body" is expressed as "Five Senses". Changes were also made in the subject orders in the 2017 curriculum. In addition, 2017 curriculum includes the subject area of "Science and Engineering Applications" and "Science Applications" which is not in the other two curriculums.

Table 2

Subject fields, units, number of acquisitions, scheduled course hours

2005 Education Program				2013 Education Program				2017 Education Program			
Grades	Subject Fields	Unit	The number of acquisitions Course Hours	Grades	Subject Fields	Unit	The number of acquisitions Course Hours	Grades	Subject Fields	Unit	The number of acquisitions Course Hours
4	The living things and life	Resolve our Body's Wisdom	23 24	3	The living things and life	Five Senses	3 6	3	Earth and the Universe	Let's Know Our Planet	5 9
	Substance and Change	Getting to know the Substance	46 36		Physical Events	Let's Know the Force	4 15		The living things and life	Five Senses	3 6
	Physical Events	Force and Motion	13 12		Substance and Change	Getting to know the Substance	4 15		Physical Events	Let's Know the Force	4 15
	Physical Events	Light and Sound	43 20		Physical Events	Light and Sounds in the Environment	8 21		Madde ve Doğası	Let's Know the substance	4 17
	Earth and the Universe	Our Planet Earth	17 16		The living things and life	Journey to the World of the Living	6 21		Physical Events	Light and Sounds in the Environment	8 21
	The living things and life	Let's Learn the World of the living	15 20		Physical Events	Electric Vehicles in our Life	4 21		The living things and life	Journey to the World of the Living	8 18
	Physical Events	Electricity in our lives	20 16		Earth and the Universe	Let's Know Our Planet	3 9		Physical Events	Electric Vehicles	4 22
5	The living things and life	Resolve our Body's Wisdom	22 20	The living things	Resolve our Body's Wisdom	8 21	4	Earth and the Universe	Earth's Crust and the Movements of	5 15	

				and life			n	the Earth			
Substance and Change	Change and Recognition of Substance	46	36	Physical Events	Force Effects	4	12	The living things	Our Food	6	18
Physical Events	Force and Motion	21	14	Substance and Change	Getting to know the substance	11	27	Physical Events	Force Effects	5	12
Physical Events	Electricity in our lives	16	12	Physical Events	From Past to Present Lighting and Sound Technologies	12	21	Substance and its nature	Properties of Substance	10	21
Earth and the Universe	Earth, Sun and Moon	19	12	The living things	Microscopic Living and the Environment	7	9	Physical Events	Lighting and Sound Technologies	12	21
The living things	Let's Learn the World of the living	33	30	Physical Events	Simple Electric Circuits	3	9	The living things	Human and Environment	2	6
Physical Events	Light and Sound	39	20	Earth and the Universe	Movements of Our World	1	9	Physical Events	Simple Electric Circuits	3	6
								Science and Engineering Applications	Applied Science	3	9

DISCUSSION, CONCLUSION AND SUGGESTIONS

In this research, which is a qualitative research method based on a document review, Turkish National Education primary science curriculum which was prepared based on constructivist approach in 2005, updated in 2013 and re-revised in 2017 has been examined comparatively. These curriculums have been comparatively analyzed in terms of basic philosophy of the curriculums, general objectives, basic skills in curriculums, approaches in educational situations, evaluation process, subject areas, acquisition and course hours. The basic philosophy of the three curriculum is based on the progressive philosophy of educational philosophies (Dewey, 1920), and the constructivist learning-teaching approach is adopted in all three programs. The vision of the 2005 and 2013 curricula was "educating all students as science literate individuals" but the vision of 2017 curriculum was not mentioned. However, the basic philosophy of the 2017 curriculum has been elaborated. The development of individuals who live and keep alive the national spiritual values, internalize universal values, have responsibility, have confidence, have critical and innovative thinking skills, have new understanding and can look at the world from different windows were expressed in the basic philosophy of the curriculum. As a matter of fact, these skills are handled in many sources as 21st Century skills (American Association of School Librarians [AASL], 2007; Partnership for 21st Century Skills [P21], 2009; Trilling & Fadel, 2009).

It is very important that the basic philosophy of the updated 2017 curriculum aims to give students 21st Century skills. In addition, in the 2017 curriculum, science and engineering applications are included in the scope of the Applied Science Unit at the 4th grade, which is not included in other curriculums. Within the scope of these applications, students are expected to work on solving the problems encountered in daily life within the scope of the topics covered in science courses and to develop product / inventions aimed at solving these problems. Morrison (2006) notes that science and engineering practices have improved students' abilities. This is in line with the development of the skills expected of the students at the core philosophy of the program. When the number of courses of instruction and the duration of course hours are examined, it is seen that the number of acquisitions in the 2005 curriculum is considerably high and the number of teaching hours per acquisition is low. In 2013 and 2017 curriculums, it is seen that the number of units and the number of subjects are significantly reduced. In the research conducted by Karaman & Karaman (2016) and Şentürk & Ciğerci (2017), the teachers stated that the topics and acquisition in some units of the science course were excessive and therefore they were not able to finish the subjects during the period stated in the program. With the revision in the curriculum in 2017, it can be stated that this negativeness will come to an end. In addition, during the practice studies to be carried out in the applied science unit which lastfor 9 course hours in the 4th grade and during the implementation exercises, repetition of the topics and reinforcements can be included.

At the end of the study, the following recommendation can be made The science curriculum that was introduced in 2017 is being implemented by teachers this year. For this reason, teachers who are practitioners of the curriculum can be consulted about the problems they encounter during the application. In addition, students' views can also be taken. In addition, the current curriculum may be subject to more extensive evaluation by experts under program evaluation principles. The areas where children experience life related to science applications have increased in recent years in Turkey. Areas such as observation areas in playgrounds, small zoo gardens, hobby gardens, science houses where science materials are found, robotic design and coding centers, science centers for children have been arranged (Şentürk, 2017). In science and practice centers students are enabled to gain experience within the scope of the applied science unit in the curriculum.

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Classifying Master's and PhD Theses Whose Titles Contain Concept of "Critical Thinking" by Different Variables¹

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Abstract:

Independent and original thinking are the concepts which define critical thinking. A critical thinker doesn't passively accept other people's views and thoughts, on the contrary he constitutes his own thoughts by analyzing them. This independence liberates his mind, heart and actions (Doğanay and Ünal, 2006). In this context, the definition of critical thinking can be summarized as reaching a conclusion by reasoning (collecting information for a present situation, defining assumptions and evidences, discussing the defined evidences and inferring and synthesizing) on a problem or a situation (Demirel, 2006). Critical thinking becomes a basic skill in occupational groups. To improve the quality of the services people get, all professionals, especially doctors, teachers, architects, lawyers, nurses, builders, must have the ability to think critically. This study aims to classify the master's and PhD theses whose titles contain the concept of "critical thinking" by different variables. The data were collected from the 211 master's and PhD theses completed between 1999- 2014 and registered to database of Council of Higher Education. This study was conducted through descriptive survey model and descriptive statistics were used in the analysis process. Thesis were examined and classified under the following topics; (1) academic level, (2) the universities in which they were prepared, (3) preparation year, (4) research method, (5) research model, (6) education level of the participants, (7) departments in which they were prepared (8) gender of the researchers, (9) degree of the supervisors (10) number of pages. At the end of the study it was found that most of the theses about critical thinking were master's theses and they were prepared in well-established universities. There are hardly any theses prepared in private universities. The number of theses about critical thinking reached its top point between 2009-2012. While most of the master's theses were conducted through quantitative method, most of the PhD theses were conducted through mixed and experimental designs. The participants of most of the theses about critical thinking were university and primary school students. Teachers and nurses participated in more theses than other occupational groups. Most of the theses about critical thinking were conducted in the field of education. nursing and health care departments takes the second place. However, it is interesting that hardly any theses were conducted in the fields of law, politics, public administration, sociology and psychology. Another interesting point is that most of the theses were prepared by female researchers.

Keywords: Critical thinking, Classification, Master Thesis, PhD Thesis

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INTRODUCTION

Thinking is an active, purposive process performed to understand the situation one is in. Everything lies in the thoughts, is managed and produced with the thoughts. Thoughts are unified by balancing the mind, body and spirit. However, in order to choose the most effective ones, eliminations must be done. This elimination is done with the critical thinking. While producing the thoughts which haven't been produced before creativity comes into prominence. The things which constitute life are the continuous creation of thought (Kurnaz, 2011). Thinking is the reflection of outside world to human mind. Moreover, thinking means things and thoughts which are mentally formed and revived. Thinking is all the mental behaviors people purposefully do to get rid of internal and external factors which disturbs them and their physical and psychological balance (Kazancı, 1989: 12).

Today's educators accept that critical thinking is a disciplined and self-controlled thinking which reveals perfect thinking related to a specific thought field or style and they state that it occurs in two ways. If the mental process is designed to serve the interests of a certain group or individual, it keeps the other people out of the subject. It becomes a complex process and called "weak-sense critical thinking". If it is designed to take into account the thoughts of opposing groups and individuals, it becomes an impartial process and called "strong-sense critical thinking". While weak-sense critical thinking composed of micro skills of critical thinking such as thought analysis, synthesis and evaluation, strong-sense critical thinking includes disciplined and impartial perspectives related to a problem. Strong-sense critical thinking is freed from the traps caused by the egocentrism and self-deception (Demirel & Şahinel, 2005).

Watson and Glaser (1964) defined critical thinking as a general process which contains actions such as problem solving, questioning and research. They summarize it as both a skill and attitude, defining a problem, collecting and choosing the necessary information to solve the problem, defining structured and unstructured assumptions, choosing assumptions leading to a conclusion, inferring valid conclusions and discussing the validation of these conclusions. Ennis (1989), who has many studies on critical thinking, defined critical thinking as thinking reasonably and reflectively while deciding what to do and to believe. According to McPeck (1981) it is a skill and tendency of thinking skeptically and reflectively on the content and information of a given discipline. When these definitions are unified, a new definition can be made. Critical thinking is a skill and tendency of thinking skeptically and reflectively while deciding what one does and believes.

When we evaluate different definitions and approaches about critical thinking, it is possible to reach some common points. First of all, critical thinking is a complex and holistic thinking process which contains knowledge, skills, strategies and attitudes. The basic principles of this thinking process can be summarized as follows (Doğanay and Ünal, 2006):

Critical thinking is a process of perceiving the truth objectively. However, truths may not be as they seem. So critical thinking is reaching a conclusion by exploring a truth with its positive and negative, visible and non-visible sides. Critical thinking is a process of reasoning depending on the information at hand. But the process of getting information is a critical one. In this process, the sources of the information must be questioned, the information must be cross checked from different sources and assumptions and biases must be defined. A critical thinker is aware of how and why he thinks. He takes into account not only his thinking process but also the thinking process of others.

One of the significant concepts which defines critical thinking is original thinking. A critical thinker doesn't passively accept other people's views and thoughts, on the contrary he constitutes his own thoughts by analyzing them. This independence liberates his mind, heart and actions (Doğanay and Ünal, 2006). In this context, the definition of critical thinking can be summarized as reaching a conclusion by reasoning (collecting information for a present situation, defining assumptions and evidences, discussing the defined evidences and inferring and synthesizing) on a problem or a situation (Demirel, 2006).

Critical thinking becomes a basic skill for occupational groups. To improve the quality of the services people get, all professionals, especially doctors, teachers, architects, lawyers, nurses, builders must have the ability to think critically. Within the scope of 2071 aims, Turkey aims to train people who have high-level mental abilities such as critical, reflective and creative thinking, and problem solving. It has become a necessity that all professionals must be equipped with high-level abilities to support the development of the country, to produce new technologies and to compete with their colleagues at an international level.

On the basis of the reasons mentioned above, studies about the teaching of critical thinking and determining the critical thinking ability of people are done. It is certain that these studies will continue. That determining in what occupational fields, to what extent and in what points these researchers focused on and developing the future ones concerning it is necessary.

Purpose

This study aims to classify the master's and PhD thesis whose titles contain the concept of "critical thinking" by different variables. Thesis were examined and classified under the following topics; (1) academic level, (2) the universities in which they were prepared, (3) preparation year, (4) research method, (5) research model, (6) education level of the participants, (7) departments in which they were prepared (8) gender of the researchers, (9) degree of the supervisors (10) number of pages.

METHOD

Research Model

This study was conducted through descriptive survey model. Descriptive statistics, percentages and frequencies were used in the analysis process. The qualitative methods in the research were conducted by the document analysis. The technique as "systematic examination of existing records or documents as data sources". A document review involves analysis of written materials that contain information about the cases or phenomena targeted to be investigated. A document review is a data collection technique that is inevitable for almost any research. If there is no document there is no knowledge (Madge, 1965).

Data Collection Tools

The data were collected from the 211 master's and PhD theses completed between 1999-2014 and registered to database of Council of Higher Education.

Theses were examined and classified under the following topics:

1. Academic level of the theses
2. The Universities in which the theses prepared
3. Preparation year
4. Research method
5. Research Model
6. The education level of the participants
7. Department in which the theses prepared
8. Gender of the researchers
9. Degree of the theses supervisors
10. Number of pages

RESULTS

The findings obtained from 211 theses are stated below. The academic level of the theses are shown in the Table 1.

Table 1

Distribution of theses regarding their academic level

Academic level of thesis	N	%
Master's	152	% 72
PhD	59	% 28
Total	211	% 100

As it is seen in table -1 152 out of 211 theses were master's (%72) and 59 (%28) of them were PhD theses. According to the data most of the theses were master's theses.

The second question of the study was about how is the distribution of the theses regarding the universities prepared in. Results are shown in Table 2.

Table 2

Distribution of theses regarding the universities they were prepared in

University	Master's (f)	%	PhD (f)	%	Total	%
Gazi Un.	12	7,9	13	22	25	11,8
Hacettepe Un.	13	8,6	5	8,5	18	8,5
Çukurova Un.	11	7,2	2	3,4	13	6,2
Ankara Un.	7	4,6	4	6,8	11	5,2
Marmara Un.	6	3,9	5	8,5	11	5,2
METU	4	2,6	5	8,5	9	4,3
Sakarya Un.	8	5,3	1	1,7	9	4,3
Anadolu Un.	4	2,6	4	6,8	8	3,8
Dokuz Eylül Un.	3	2	5	8,5	8	3,8
Fırat Un.	3	2	4	6,8	7	3,3
İstanbul Un.	4	2,6	3	5,1	7	3,3
İzzet Baysal Un.	6	3,9	1	1,7	7	3,3
18 Mart Un.	6	3,9	-	-	6	2,8
A.Menderes Un.	3	2	2	3,4	5	2,4
Selçuk Un.	4	2,6	1	1,7	5	2,4
Atatürk Un.	3	2	1	1,7	4	1,9
Karaelmas Un.	4	2,6	-	-	4	1,9
M. Kemal Un.	4	2,6	-	-	4	1,9
Yeditepe Un.	4	2,6	-	-	4	1,9
Bilkent Un.	3	2	-	-	3	1,4
Ege Un.	2	1,3	1	1,7	3	1,4
Kocatepe Un.	3	2	-	-	3	1,4
Konya NEU	3	2	-	-	3	1,4
Mersin Un.	3	2	-	-	3	1,4
Osmangazi Un.	3	2	-	-	3	1,4
Yıldız Technical Un.	2	1,3	1	1,7	3	1,4

İnönü Ün.	2	1,3	-	-	2	0,9
Kocaeli Ün.	2	1,3	-	-	2	0,9
Sıtkı Koçman Ün.	2	1,3	-	-	2	0,9
Sütçü İmam Ün.	2	1,3	-	-	2	0,9
Adıyaman Ün.	1	,7	-	-	1	0,5
Amasya Ün.	1	,7	-	-	1	0,5
Atılım Ün.	1	,7	-	-	1	0,5
Cumhuriyet Ün.	1	,7	-	-	1	0,5
Çağ Ün.	1	,7	-	-	1	0,5
Erciyes Ün.	1	,7	-	-	1	0,5
G.Osmanpaşa Ün.	1	,7	-	-	1	0,5
ITU	1	,7	-	-	1	0,5
Kafkas Ün.	1	,7	-	-	1	0,5
KTU	1	,7	-	-	1	0,5
M. Akif Ün.	1	,7	-	-	1	0,5
19 Mayıs Ün.	-	-	1	1,7	1	0,5
S. Demirel Ün.	1	,7	-	-	1	0,5
T. Erdoğan Ün.	1	,7	-	-	1	0,5
Uludağ Ün.	1	,7	-	-	1	0,5
Uşak Ün.	1	,7	-	-	1	0,5
Yüzüncü Yıl Ün.	1	,7	-	-	1	0,5
Total	152	100	59	100	211	100

The universities which have the most theses about critical thinking are Gazi University Hacettepe University Çukurova University, Ankara University, Marmara University, METU, Sakarya University, Anadolu University, Dokuz Eylül University. Number of theses are respectively 25 (%11,8), 18 (%8,5), with 13 (%6,2), 11 (%5,2), 11 (%5,2), 9 (%4,3), 9 (%4,3), 8 (%3,8), 8 (%3,8). The universities with the least theses are Adıyaman, Amasya, Atılım, Cumhuriyet, Çağ, Erciyes, G.Osmanpaşa, ITU, Kafkas, KTU, M. Akif, 19 Mayıs, S. Demirel, T. Erdoğan, Uludağ, Uşak ve Yüzüncü Yıl universities which have 1 (%0,5) thesis about critical thinking.

Data about when these 211 theses were prepared are shown in Table 3.

Table 3

Distribution of theses regarding their preparation year

Year	Master's	%	PhD	%	Total	%
1999	2	1,3	-	-	2	0,9
2000	-	-	-	-	-	-
2001	2	1,3	2	3,4	4	1,9
2002	5	3,3	1	1,7	6	2,8
2003	3	2,0	-	-	3	1,4
2004	2	1,3	2	3,4	4	1,9

2005	6	3,9	2	3,4	8	3,8
2006	6	3,9	4	6,8	10	4,7
2007	7	4,6	7	11,9	14	6,6
2008	13	8,6	3	5,1	16	7,6
2009	19	12,5	4	6,8	23	10,9
2010	22	14,5	6	10,2	28	13,3
2011	24	15,8	8	13,5	32	15,2
2012	16	10,5	5	8,5	21	10,0
2013	14	9,2	13	22,0	27	12,8
2014	11	7,2	2	3,4	13	6,2
Total	152	100	59	100	211	100

As it is shown in table-3 with 32 (%15,2) theses 2011 is the year when the most theses prepared. 2010 takes the second place with 28 (%13,3) theses. 2013, 2009 and 2012 follow them with 27 (%12,8) ,23 (%10,9), 21 (%10,0) theses respectively. It is seen that most of the theses were written between 2009 and 2012.

Research method of the theses are shown in Table 4.

Table 4

Distribution of theses regarding their research method

Research Method	Master's	%	PhD	%	Total	%
Quantitative	129	84,9	14	23,7	175	82,9
Qualitative	20	13,2	14	23,7	24	11,4
Mixed	3	2,0	31	52,6	12	5,7
Total	152	100	59	100	211	100

As it is shown in table-4 quantitative method was used in 175 theses (%82,9), qualitative research method was used in 24 theses (%11,4), mixed research method was used in 12 theses (%5,7).

Data about research models of the studies are shown Table 5.

Table 5

Distribution of theses regarding their research models

Model	Master'	%	PhD	%	Total	%
Experimental and quasi-experimental	39	25,7	39	66,1	78	37,0
Survey	113	74,3	20	33,9	133	63,0
Total	152	100	59	100	211	100

As it is seen in table-5, of the 211 theses about critical thinking experimental and quasi-experimental models were used in 78 (%37) and survey method was used in 113 (%63) theses.

Data about the education level of the participants of the theses are shown in Table 6.

Table 6

Distribution of theses regarding the education level of participants

Education level	Master'	%	PhD	%	Total	%
Primary and elementary school	52	34,2	17	28,8	69	32,7
High school	20	13,2	8	13,6	28	13,3
University	52	34,2	29	49,2	81	38,4
Teacher, Nurse etc.	28	18,4	5	8,4	33	15,6
Total	152	100	59	100	211	100

As it can be seen in table-6, of the theses about critical thinking university students (N=81) take the first place as the target group. At the master's level number of theses whose participants were university students and primary school students (N=52) were equal. While occupational groups participated in many master's (N=28) theses, they participated in only five PhD theses. High school students participate in master and PhD theses at the same rate (%13).

Data about the departments in which theses was prepared are shown in Table 7.

Table 7

Distribution of theses regarding their departments

Departments	Master's	%	PhD	%	Total	%
Educational sciences	56	36,8	28	47,5	84	39,8
Science and Mathematics	19	12,5	10	16,9	29	13,7
Primary School (Social sciences, pre-school, education of religion and ethics)	17	11,2	3	5,1	20	9,5
Primary school teaching	11	7,2	5	8,5	16	7,6
Nursing	11	7,2	2	3,4	13	6,2
ELT and Foreign Languages	10	6,6	1	1,7	11	5,2
Turkish and Turkish Literature	9	5,9	1	1,7	10	4,7
Computer and Technology	3	2	4	6,7	7	3,3
Special Education and gifted	3	2	2	3,4	5	2,4
Physical training and sports	2	1,3	1	1,7	3	1,4
Fine arts and Music	2	1,3	1	1,7	3	1,4
Philosophy and religion	2	1,3	-	-	2	0,9
Journalism and communication	1	0,7	1	1,7	2	0,9
Geography	1	0,7	-	-	1	0,5
Handicrafts	1	0,7	-	-	1	0,5
Public relations	1	0,7	-	-	1	0,5
Business	1	0,7	-	-	1	0,5
Architecture	1	0,7	-	-	1	0,5
Sociology	1	0,7	-	-	1	0,5
Total	152	100	59	100	211	100

As it is shown in table-7, of theses about critical thinking 84 (%39,8) of them were prepared in Educational sciences department and 29 (%13,7) were prepared in Science and Mathematics departments. Following five departments are as follows:

N=20 (%9,5) Primary School (Social Sciences, Pre-school, Education of religion and ethics

N=16 (%7,6) Primary School Teaching

N=13 (%6,2) Nursing

N=11 (%5,2) ELT and Foreign Languages

N=10 (%4,7) Turkish and Turkish literature

Data about the gender of researchers preparing the theses are shown in Table 8.

Table 8

Distribution of theses regarding the gender of researchers preparing them

Gender	Master's	%	PhD	%	Total	%
Female	112	73,7	36	61	148	70,1
Male	40	26,3	23	39	63	29,9
Total	152	100	59	100	211	100

As it is shown in table-8, there are more female researchers than male ones especially in master's degree. Of the 211 theses 148 (%70,1) were prepared by female researchers and 63 (%29,9) of them were prepared by male researchers. A closer look into academic level of theses has shown that in master's degree there were 112 (%73,7) female and 40 (%26,3) male researchers, in PhD degree there are 36 (%61) female and 23 (%39) male researchers.

Data about the academic degree of the supervisors are shown in Table 9.

Table 9

Distribution of Theses Regarding the Academic Degree of Their Supervisors.

Academic Degree of the supervisors	Master's	%	PhD	%	Total	%
Dr./asst. Prof. Dr.	88	57,9	14	23,7	102	48,3
Assoc. Prof. Dr.	28	18,4	14	23,7	42	19,9
Prof. Dr.	36	23,7	31	52,6	67	31,8
Total	152	100	59	100	211	100

As it is shown in table-9 it is seen that while the academic degree of supervisors of master's theses were generally asst. prof. dr. and assoc. prof. dr. (%57,9), the academic degree of supervisors of PhD theses were prof. dr. (%52,6). When they were examined considering the academic degree of supervisors of the master's theses 88 (%57,9) of them

were Dr./Asst. Prof. Dr., 28 (%18,4) of them were Assoc. Prof. Dr. and 36 (%23,7) of them were Prof. Dr. When they are examined considering the academic degree of supervisors of PhD theses 14 (%23,7) of them were Dr./Asst. Prof. Dr., 14 (%23,7) of them were Assoc. Prof. Dr. and 31 (%52,6) of them were Prof. Dr. The total number of supervisors of master's and PhD theses were as follows; 102 (%48,3) Dr./Asst. Prof. Dr., 42 (%19,9) Assoc. Prof. Dr. and 67 (%31,8) Prof. Dr.

Data about the total page number of the theses are shown in Table 10.

Table 10
Total Page Number of the theses

Level of Theses	N	Average Page Number	Min. Page Number	Max. Page Number
Master's	152	144,96	49	416
PhD	59	249,89	116	630
Total	211	174.30	49	630

As it is shown in table-10, total page number of master's theses were between 46-416 and the average page number was found as 144,96. Total page number of PhD theses were between 116-613 and the average page number was found as 249,89. The average page number of master's and PhD theses were calculated as 174,3.

DISCUSSION, CONCLUSION AND SUGGESTIONS

Most of the theses about critical thinking were master's theses and they were prepared in well-established universities. There are hardly any theses prepared in private universities. At Çukurova University especially one academician is very effective. From this point of view, by taking necessary measures to encourage academicians to prepare theses in this field, it can be made possible to conduct researches about critical thinking in new universities.

The number of theses about critical thinking reached its top point between 2009-2012. While most of the master's theses were conducted through quantitative method, most of the PhD theses were conducted through mixed and experimental methods. It is thought that experimental and mixed methods should be encouraged in master's level and it is needed that qualitative methods should be used in both levels.

The participants of most of the theses about critical thinking were university and primary school students. Teachers and nurses participated in more theses than other occupational groups. Most of the theses about critical thinking were conducted in the field of education. nursing and health care departments take the second place. However, it is

interesting that hardly any theses were conducted in the fields of law, politics, public administration, sociology and psychology.

Another interesting point is that most of the theses were prepared by female researchers. Although female researchers are predominant in both academic levels, this gap is even more in master's level.

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